Reference Dept
7th Tier

SEPTEMBER, 1959 • 35¢

AMERICAN

Cinematographer

SERVING ALL FIELDS OF MOTION PICTURE PRODUCTION

ST. LOUIS
SEP 9 1959
PUBLIC LIBRARY

The Magazine of Motion Picture Photography

2

In This Issue:

• Exposure Accuracy With Magic-eye Cameras
• Photographing "Last Train From Gun Hill"
• Gyro Stabilizer For Hand-held Cameras
• Color In Motion Pictures And TV

EASTMAN

PROFESSIONAL
MOTION PICTURE

FILMS

W. J. GERMAN, Inc.

6677
SANTA MONICA BOULEVARD
HOLLYWOOD 38, CALIFORNIA

HOllywood 4-6131

FIRST CLASS
Permit No. 24110
Los Angeles, Calif.

BUSINESS REPLY CARD
No Postage Stamp Necessary if Mailed in the United States

4c Postage Will Be Paid By

American Cinematographer

1782 NO. ORANGE DRIVE

HOLLYWOOD 28, CALIF.

★ ★ SUBSCRIPTION ORDER FORM ★ ★

AMERICAN CINEMATOGRAPHER
1782 No. Orange Dr.
Hollywood 28, Calif.

☐ NEW
☐ RENEWAL

Please send me **American Cinematographer**

For ☐ 3 years — $10.00 (Foreign, $13.00)
For ☐ 2 years — 7.00 (" 9.00)
For ☐ 1 year — 4.00 (" 5.00)

Name _____ Address _____
(Please Print)

City _____ Zone ____ State _____

My interest in cinematography is ☐ Professional; ☐ Amateur

My occupation is _____

☐ Remittance Enclosed ☐ Bill Me

Charlie Chaplin and Jackie Coogan in *The Kid*, 1921.

Before Charlie Chaplin and Jackie Coogan starred in The Kid in 1921, Consolidated Film Industries was contributing its knowledge and skills to the art of film processing.

In the 40 years since then, CFI is still the leader in the industry. CFI offers a *complete* film laboratory with every professional service necessary for *superior* film processing.

For the finest in film processing: *specify CFI!*

cfi

CONSOLIDATED FILM INDUSTRIES

959 SEWARD ST., HOLLYWOOD 38, CALIFORNIA
521 WEST 57th STREET, NEW YORK 19, NEW YORK

HOllywood 9-1441 Circle 6-0210

AMERICAN
Cinematographer

September, 1959 • Vol. 40, No. 9

ARTHUR E. GAVIN
Editor

EDITORIAL ASSISTANT
Marion Hutchins

CONTRIBUTING EDITORS
Derek Hill
Joseph Henry
Clifford Harrington
Joseph V. Mascelli
Herb A. Lightman

TECHNICAL EDITOR
Emery Huse

EDITORIAL ADVISORY BOARD
Arthur Edeson, A.S.C.
Robert deGrasse, A.S.C.
Burnett Guffey, A.S.C.
Wallace Kelley, A.S.C.
Arthur Miller, A.S.C.
Ray Rennahan, A.S.C.
John Seitz, A.S.C.
Lester Shorr, A.S.C.

• *In This Issue*

COLOR IN MOTION PICTURES AND TV 542
Part I: The three-color theory—By Robert Allen Mitchell.

PHOTOGRAPHING "LAST TRAIN FROM GUN HILL" 544
Carefully selected camera angles mark photography by Charles Lang, Jr., A.S.C.—By Herb A. Lightman.

MOTION PICTURE CAMERAS: THE AURICON CINE-VOICE 548
The camera that has become an important tool for many professional cinematographers

HOMEMADE FILM BIN 550
Ideal for easing task of editing 16mm film—By George J. Yarbrough.

ELECTRICAL TRIPPING MECHANISM FOR SOUND MIXING 552
Simplifies use of tape recorders for budget-film makers—By Ronald W. Moore.

ALL WEATHER CAMERAMAN 555
Cinematographer Vincent Hunter turns inclement weather to his advantage—By Clifford V. Harrington.

EXPOSURE ACCURACY WITH MAGIC-EYE CAMERAS 556
Progress report on new developments in automatic exposure control for cine cameras—By Don Norwood.

STABILIZER FOR HAND-HELD CAMERAS 558
Gyro attachment insures smoother, steadier shots—By Joseph V. Mascelli.

• *Features*

INDUSTRY NEWS 518
News briefs of industry activities and progress.

PHOTOGRAPHIC ASSIGNMENTS 528
Where and what TV and feature film cameramen were shooting last month.

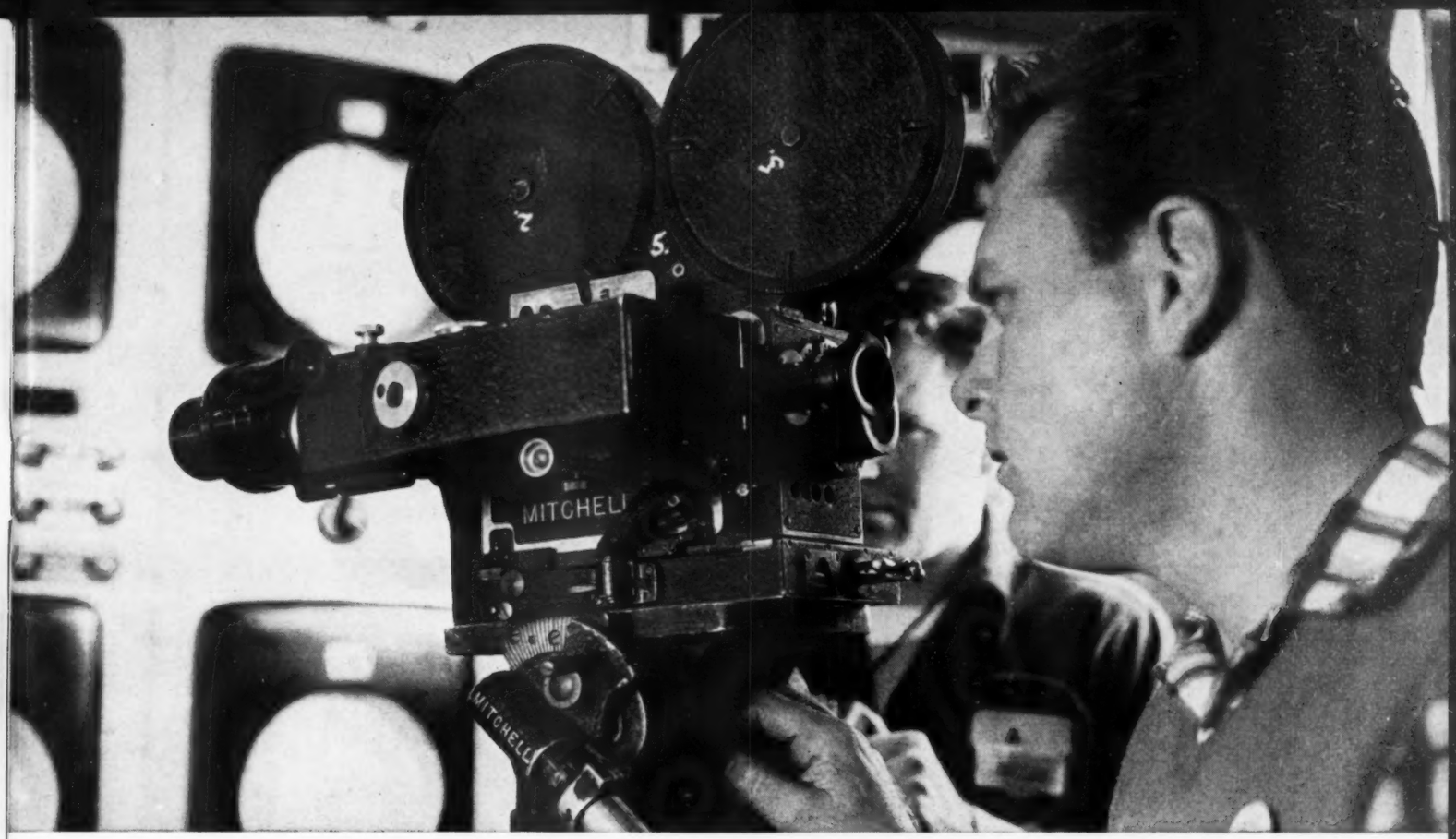
WHAT'S NEW IN EQUIPMENT, ACCESSORIES, SERVICES 532
Things that are new for makers of motion pictures.

TECHNICAL QUESTIONS AND ANSWERS 536
Reader's questions answered by experts.

ON THE COVER

PHOTOGRAPHING A SCENE in Rome for "Ben Hur" with the M-G-M (Panavision) 65 Camera. Directing the photography is Robert Surtees, A.S.C. (top right) while watching the action (seen reflected in the camera matte box's glass panel) is Director William Wyler.

EDITORIAL AND BUSINESS OFFICE: 1782 NORTH ORANGE DRIVE, HOLLYWOOD 28, CALIFORNIA. TELEPHONE: HOLLYWOOD 7-2135. AMERICAN CINEMATOGRAPHER, established 1920, is published monthly by the A. S. C. Agency, Inc., 1782 N. Orange Dr., Hollywood 28, Calif. SUBSCRIPTION: United States and Canada, $4.00 per year; Foreign, including Pan-American Union, $5.00 per year. Single copies 35 cents; back numbers 45 cents; foreign single copies, 45 cents; back numbers, 55 cents. Advertising rates on application. Copyright 1959 by A. S. C. Agency, Inc. Second-class postage paid at Los Angeles, California.



Critical moment in test of liquid propellant rocket engine is recorded by these fast moving instruments being filmed by Rocketdyne Film Unit. Rocketdyne is the largest manufacturer of liquid propellant rocket engines in the Free World.

ROCKETDYNE FILMS ROCKET ENGINE TESTS WITH MITCHELL CAMERAS

Advanced Research Films Plus Top Industrial Features Filmed by 21-Man Unit

The Motion Picture Unit at Rocketdyne, a division of North American Aviation, Inc., employs both 16mm and 35mm Mitchell cameras to accurately record testing of power plants for the Air Force Thor IRBM and Atlas ICBM missiles, and the Army's Redstone medium range and Jupiter IRBM weapons.

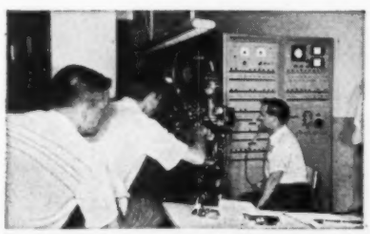
Camera dependability is of critical concern where months of preparation go into each test, and retakes are impossible. Mitchell cameras assure uniform excellence of highest film quality and trouble-free operation that no other camera can match.

Other Rocketdyne films, like the full-length prize winning documentary "Road to the Stars," demand extreme camera flexibility. Special Report films, for example, involve interior shots of plant and production lines which normally would require prohibitively expensive lighting. Mitchell cameras, with their 235 degree shutters, do this job easily with a minimum of lighting equipment.

To obtain information on the world's finest motion picture cameras write today on your letterhead. Please specify your interest in literature on the Mitchell 16mm camera—or the 35mm camera.

Precision Test Firing of Rocket Engine at Rocketdyne's Propulsion Field Laboratory is recorded by Mitchell Camera in remote 1600 acre test area in Santa Susana Mountains, California.

Scene from "Road to the Stars," which won the top award in the Industrial Film Producers Association competition, shows camera unit in plant with Mitchell on track-mounted dolly. Producer-Director was Bill Adams.



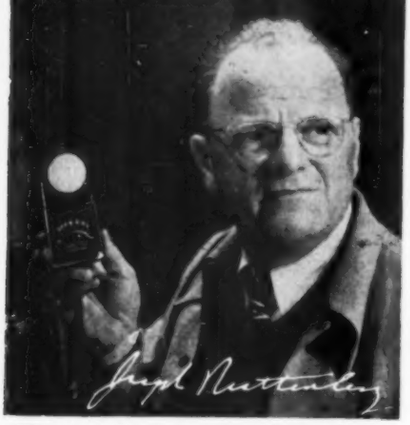
Camera requires great flexibility from long range to close-ups like this which shows the Mitchell shooting a precise view of panel operations in the recording center during a test.

Mitchell Camera
CORPORATION
666 WEST HARVARD STREET
GLENDALE 4, CALIFORNIA
Cable Address: "MITCAMCO"

85% of Professional Motion Pictures shown throughout the World are Filmed with Mitchell Cameras

BEST ACHIEVEMENT—
Color Cinematography, 1958,
"GIGI"
Awarded by Academy of
Motion Picture Arts
and Sciences

"For perfect color, I always use my SPECTRA"



That's what Joseph Ruttenberg, A.S.C., who won an "Oscar" for filming "Gigi", thinks of his SPECTRA Professional Gold Seal Exposure Meter. He continues to say, "My *SPECTRA* instantly measures total illumination with a precision that insures correct balance for brilliant color films."

For more than a decade top professionals like Mr. Ruttenberg have relied on *SPECTRA* for instant direct reading and great accuracy. The ultra sensitive *SPECTRA* Professional Gold Seal Exposure Meter comes complete with disk, grid, 16 film-speed slides and carrying case.

$97.50

Write for descriptive literature and complete specifications.

PHOTO RESEARCH CORP.
837 NORTH CAHUENGA BLVD.
HOLLYWOOD 38, CALIFORNIA
Distributed By
SCOPUS-BROCKWAY CORP.
New York 16 New York

INDUSTRY NEWS

News briefs of industry activities, products and progress

RELIGIOUS FILM making in Hollywood is big business. Here cinematographer Walter Strenge, ASC, center, takes light meter reading before starting camera on a Family Films religious production for television.

Family Films, Hollywood, last month completed the 200th episode in the TV film series, "This Is The Life." Family Films, headed by Sam Hersh, entered the religious film field only ten years ago. Today, the company is among the leaders in religious film production, having produced TV film series for the Lutheran, Southern Baptist and Methodist churches.

"This Is The Life" is televised by more than 320 stations weekly in the U.S., Canada, Alaska, Hawaii, Puerto Rico, and Australia, and ranks among the world's most televised programs.

Numerous awards have been presented to the program, including three from the Freedom Foundation for contribution to the spiritual and moral uplift of the nation. It has also received a *Billboard* award for the best thirty-minute filmed religious program on the air.

Each segment of "This Is The Life" is produced and photographed at the Family Films' studio with the same infinite care and production quality that is customarily given major theatrical films.

Director of photography Walter Strenge, A.S.C., has photographed most of the series as well as most of the religious TV films produced by Family Films for other churches.

• • •

Distribution in the United States of Arriflex 16mm and 35mm cameras as well as other Arri products was transferred by Kling Photo Corporation on July 1st to the newly-formed Arriflex Corporation of America, 257 Park Ave., New York 10, N. Y. Formation of the new corporation, according to Paul Klingenstein, president, will permit greater concentration on Arriflex sales and service and form the base for future developments.

• • •

"The Son of God," depicting the entire life of Jesus from the Annunciation through the Ascension will roll in November and will cost $30,000,000, according to Lord Malcolm Douglas-Hamilton, President of Parliament Pictures Corp., New York, which will produce it.

Said to be the highest cost motion picture of all time, it will have a cast of 50,000 and 150 principal parts. It may also be produced in a new 3-D process if research and development on a new stereo system, said not to require special viewing glasses or other viewing aids, can be completed in time by Vienna scientist, Charles Langberg.

• • •

Cinemagic is tag of newest "gimmick" for movie presentation, which will be used for first time for the Sid Pink production, "Invasion of Mars," which will roll soon at Hal Roach studios before the camera of Stanley Cortez, A.S.C.

Process, developed by Norman Maurer, can be utilized with any size negative, according to Pink, who explains that process can transform a live action film image to resemble a line drawing, as in animation, by optical methods. Just how, Pink refused to divulge in recent Hollywood press conference.

According to industry trade paper *Hollywood Reporter*, ". . . the footage is tricked up, after normal photography, with optical and chemical treatments and adjustments; this gimmicking is done to the negative after exposure."

Continued on page 522

Don't ask us to help you with the love interest.

If your script needs tinkering, go to a script doctor! Feel free, however, to come to CECO* with any technical problem. Chances are we have in stock the equipment to do what you want done. If not, we'll alter or combine—even custom-build it for you. Don't bet there's any mechanical problem CECO can't solve. In addition, we sell, rent and service the finest professional photographic equipment. Your patronage is always appreciated—whether you make a major purchase or buy a bottle of film cement.

*CECO—Trademark of Camera Equipment CO

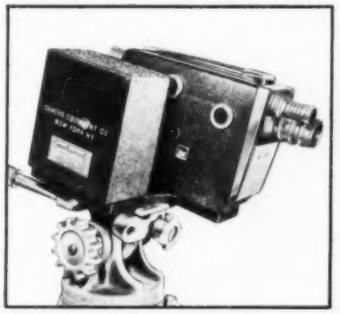
FRANK C. ZUCKER

CAMERA EQUIPMENT CO., INC.

Dept. 3 315 West 43rd St., New York 36, N. Y. JUdson 6-1420

GAUMONT-KALEE Transistorized Magnetic Sound Attachment for ARRIFLEX 16

Converts ARRIFLEX 16 into a single system magnetic sound camera unit that's compact, lightweight, well-balanced. Unit is mounted between camera and tripod head. Transistorized amplifier. ARRI can still be used as silent camera by simply removing sound attachment.

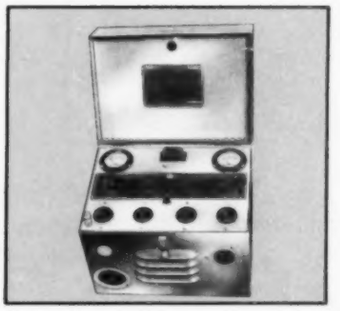


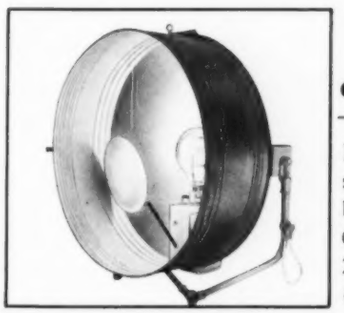
110 Volt AC Synchronous Motor for Kodak Model K-100 Camera

A fine, precision motor that drives camera at exact sound speed of 24 fps. Easy to attach, no special tools required. Synch motors for other cameras available.

Colortran Master "Chief" Converter

Has every improvement and convenience feature for motion picture work. Portable, yet large in capacity. Can be used as master control panel to set up individual line intensity variations. 30 amps from 220 volts; 45 amps from 115 volts.





CECO Cone Lights 5000 Watt —2000 Watt—750-1000 Watt

Floods large area with shadowless, soft light. Can be placed close to actors. Complete with switch, 25 ft. cable and yoke. (5000 Watt illustrated).

Additional Products

CECO offers the world's largest and most comprehensive line of professional cameras, accessories, lighting, editing, processing and animation equipment including: MAURER Products (Exclusive Distributor); Oxberry Animation Equipment; Cooke Speed Panchro Series II, Kinetal, Kinoptic, and Bausch & Lomb Baltar Lenses. Other products we carry are: Color Charts · Computers · Splicers · Exposure meters · Projectors · Screens · Marking pencils and pens · editors gloves · stop watches.

Rentals

Cameras · 16mm and 35mm

Editing Equipment

Lighting Equipment

Generators · Truck mounted or Portable

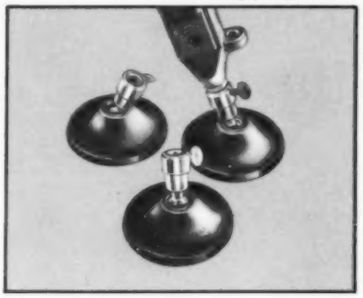
Sound Equipment

Projection Equipment

Grip Equipment

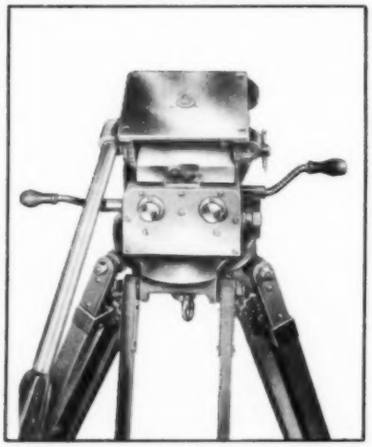
Sta-Sets

Made of the finest rubber in the shape of a suction cup, these Sta-Sets keep tripods from slipping on any slippery floor.



CECO Professional Junior Gyro Tripod

Features "controlled action" with slow and fast speeds for both panning and tilting. Only 19 lbs. Can be used as geared head. Ideal for 16mm Maurer, Mitchell, B&H Eyemo and similar cameras.

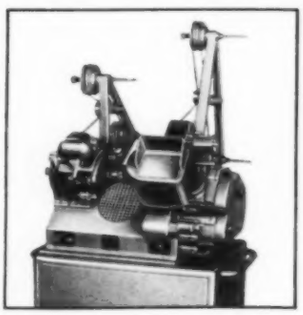


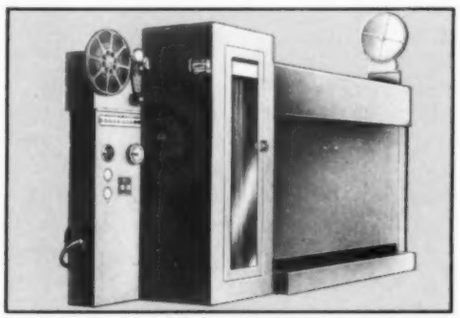
MOVIOLA Crab Dolly

The ultimate in camera mobility. Features crab, conventional and locked steering. Boom raised to 60" or lowered to 22" by hydraulic cylinder. 2 seats can be shifted to 6 different positions. All aluminum carriage. Length 64"; Width 34".

MOVIOLA Film Editing Machine "Series 20"

Available in several models to meet various requirements. Streamline-styled. Clear sound quality. Convenient to use. Large screen size. Short pieces can be used without putting film on reels.





FILMLINE Processor Model R60

Heavy duty Reversal and Negative-Positive processor with completely controlled processing. Has exclusive "Temp-Guard" system. Feed-in and take-up elevators for continuous operation. Output speeds to 3600′ per hour. Other models available.

Ask about our Precision Repair and Design Engineering Service!

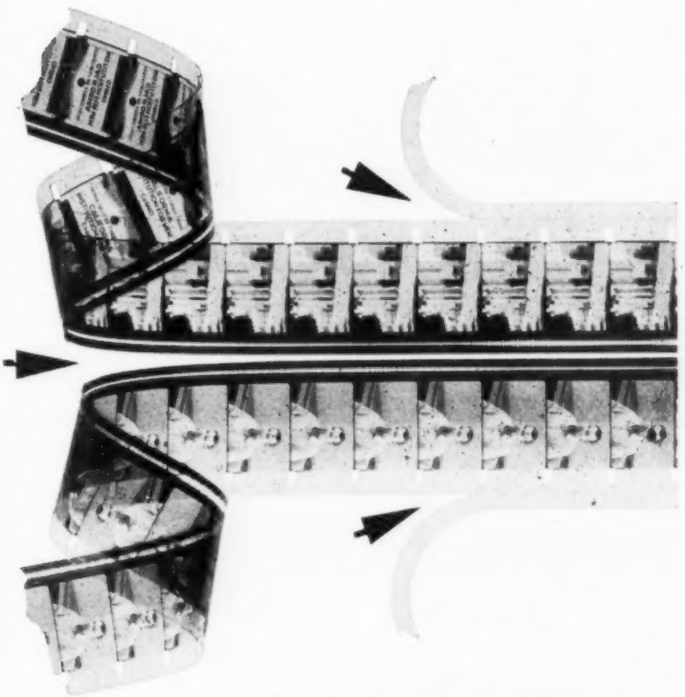
SALES
SERVICE
RENTALS

FRANK C. ZUCKER

CAMERA EQUIPMENT CO., INC.

Dept. 3 315 West 43rd St., New York 36, N. Y. JUdson 6-1420

35 32



. . . a unique process pioneered by General Film in which a strip of 35mm film, perforated with 32mm sprocket holes, is split down the center to produce two 16mm prints of outstanding quality.

After successfully processing millions of feet of 35/32 black and white and color film we have observed many outstanding advantages and list a few: better sound quality, lack of roller abrasions in sound track area, the ability to use standard 35mm professional equipment, and the efficiency that comes from handling two prints in one operation. Negatives made on 35/32 film stand wear and handling of multiple printing much better than do 16mm negatives.

Additional information to help you apply these advantages to your own film needs is available on request. Ask for Bulletin G.*

GENERAL
FILM LABORATORIES CORP.
1546 ARGYLE, HOLLYWOOD 28, CALIF., HO 2-6171

*Presented October 9, 1956 at SMPTE Convention at Los Angeles by William E. Gephart, Jr., V.P. of General Film Laboratories Corp.

HOUSTON FEARLESS

COLOR LABMASTER

Film processor for Ektachrome 7255 and Anscochrome

Efficient, fully-automatic processing of 16mm Ektachrome 7255 or 16mm* Anscochrome reversal color films is accomplished with the new Houston Fearless Color Labmaster. Ease of operation is provided by the many automatic features. The Color Labmaster is a fine, precision-built machine, yet low in price . . . a result of Houston Fearless' 30 years of leadership in the manufacture of film processing equipment.

- Speed variable up to 30 f.p.m.
- Daylight operating. Dark room model available.
- All tanks stainless steel.
- Variable clutch-drive film transport prevents film breakage.
- All running-water washes.
- Accurate solution temperature controls.
- Double-headed rubber wipers.
- Air squeegee.
- Adjustable lifter rods.
- Filtered-air heat in dry box.
- Extra film magazines.
- Direct reading thermometers.

*16/35mm model also available

HOUSTON FEARLESS

See us at the SMPTE Convention, New York, Space Nos. 7 and 8

HOUSTON FEARLESS CORPORATION
11805 W. Olympic Blvd., Los Angeles 64, California
Send catalog and prices on:
( ) Color Labmaster processors. ( ) B & W processors. ( ) Camera heads. ( ) Remote control heads. ( ) Tripods. ( ) Dollies. ( ) Pedestals.

Name_____
Firm_____
Address_____
City_____ Zone____ State_____

INDUSTRY NEWS

Continued from page 518

An electronic switching device which makes possible instantaneous switching from live to tape without the rollover or picture breakup that has characterized such switching heretofore, has been perfected by ABC-TV engineers. Device locks the individual synchronizations of the live and tape signals so they remain in sync throughout the program's broadcast interval. It is understood that same sync lockup can also be effected between segments of film programs, so that tape and film can be integrated in the same program.

• • •

Two stock model 8mm electric-eye cine cameras under trial in a laboratory at Bell & Howell, Chicago, have proved that the cameras' automatic exposure controls would, with average usage, last at least 3,750 years—or until 5708 A.D. Estimate is based on camera user shooting an average of 50 rolls of film per year in rapidly changing light conditions.

Laboratory trials begun early in August, 1957, have exposed the electric-eye units to an intermittently flashing light placed inches away. The blinking light operates around the clock at one-second intervals and causes the photo-electric cell in the electric-eye mechanism to adjust the camera lens openings 15,000 times a day.

To date, after more than 7,500,000 cycles, the electric eyes have outlived four light bulbs, an electronic counter which records each flash, and an electronic tube used to turn off the counter if the light fails.

• • •

"Who needs instant commercials, any more than we need instant ideas, instant print ads, instant creativity, instant art?"

Question was posed recently by Robert L. Lawrence, one of the top TV commercial producers in New York, who has come out strongly against the use of videotape for TV commercials—"for at least another year." He said that V-tape cannot match film's unlimited technological capacities in editing, in animation nor in use of opticals. "To say that tape is cheaper than film is to compare pears with lemons," he concluded. ■

in the East it's...

MOVIELAB

for

COLOR

EASTMAN COLOR

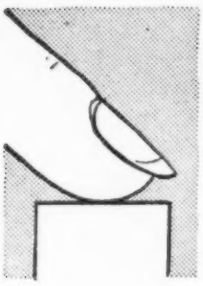
- DEVELOPING **35MM (5248) COLOR NEGATIVE**
- DEVELOPING **35MM (5253) AND 16MM (7253) INTERMEDIATES**
- **35MM** ADDITIVE **COLOR PRINTING**
- **16MM** CONTACT **AND** REDUCTION **ADDITIVE COLOR PRINTING**
- INTERNEGATIVES **16MM (7270) FROM 16MM KODACHROMES**
- BLOW-UPS **FROM 16MM KODACHROME TO 35MM COLOR**
- **KODACHROME** SCENE TO SCENE **COLOR BALANCED PRINTING**
- **35MM COLOR** FILM STRIP PRINTING

MOVIELAB

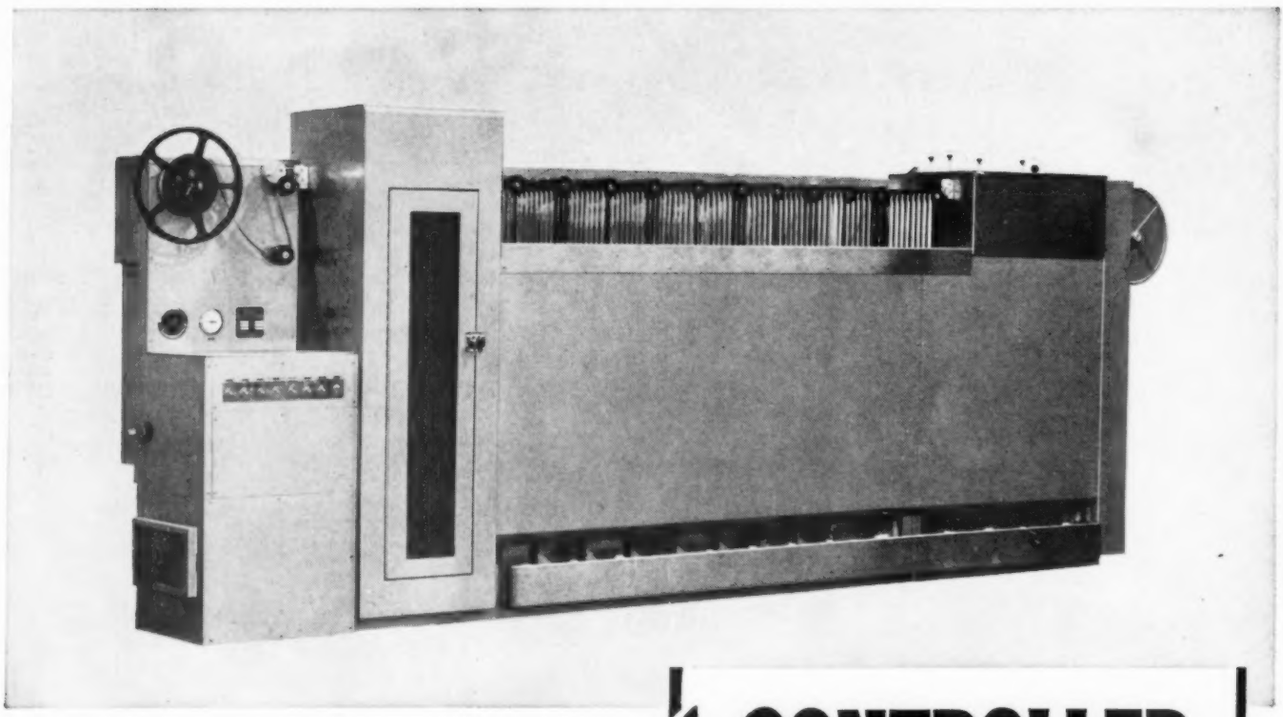
COLOR CORPORATION

Write for Color Methods Brochure

MOVIELAB BUILDING · 619 W. 54th ST. NEW YORK 19, N. Y. JUDSON 6-0360



NEW! COLOR...ANSCOCHROME / EKTACHROME at your fingertips!



FILMLINE MODEL AC-8 COLOR PROCESSOR

16MM Anscochrome ..... 480 Ft. an Hour
16MM Ektachrome ..... 1,380 Ft. an Hour

Filmline's exclusive "ACCURATED OVERDRIVE" film transport mechanism guarantees 100% machine performance and protection for your films. The film can actually be manually held at the feed-in end of the machine to a 100% stall without breaking the film or altering the film footage per tank substantially. Machine automatically resets itself upon release of the film. This feature is *exclusive* with Filmline and is found in all Filmline processors.

Filmline Milford, Conn. Dept. Au-59 Corp.

World's Largest Line of Film Processors Manufactured Under One Label

DISTRIBUTED BY: CAMERA EQUIPMENT CO., NEW YORK, N.Y.
CALDWELL EQUIPMENT CO., TORONTO, CAN.

CONTROLLED PROCESSING

Plus all these features

- Daylight Operation
- Variable Speed Drive
- Exclusive *"ACCURATED OVERDRIVE"*
- Temp-Guard Temperature Control System
- Forced Warm-Air Drybox. *No Heating Lamps Used!*
- Feed-in and take up Elevators for Continuous Processing
- Adjustable Film Racks in Each Tank
- All Metal Construction. *No Plywood Used!*
- Stainless Steel Tanks, Fittings, Recirculation Pumps, Etc.
- Replenishment Fittings and Bottom Drain Valves
- Oil-less Air Compressor
- Filmline Cushnblo Air Squeegee

FULLY EQUIPPED $12,700
F.O.B. Milford, Conn.
(Other Color Processors Available)
LEASE OR TIME PAYMENT PLANS

Use the Quiet Running **AURICON** 16mm Sound-On-Film Camera ...and NEVER DISTURB THE AUDIENCE WITH CAMERA NOISE!

Does the scene above look familiar? You may be interested to know more about its significance relative to your sound recording needs.

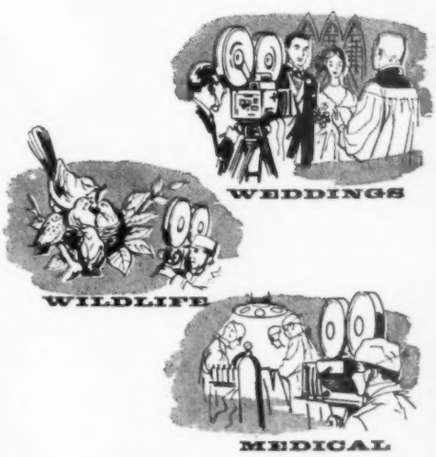
Here is Auricon Professional 16mm Motion Picture Sound Camera Equipment, operating right in the middle of an audience — actually within inches of the surrounding spectators! Yet, despite the complex precision mechanisms that are recording a full-color picture and every whispered word of the speaker on the rostrum, not even a murmer of distracting camera noise is heard by the audience. This quiet, dependable recording of 16mm Sound-On-Film Talking Pictures is the special engineering "magic" of Auricon!

Except for the red signal lights glowing on the Auricon Sound Camera, the audience has no way of knowing that the Camera is running. In fact, even the click of the on-off switch has been muted!

Auricon Cameras are versatile and easy-to-handle because there is no bulky, sound-proof enclosure "blimp" such as all other 16mm cameras use when recording sound.

Professional Producers and Cameramen choose Auricon to shoot pictures synchronized with Optical or Magnetic "Double-System" recording equipment, or to record "Single-System" sound on the same film taking the picture. Write us about your sound recording equipment needs today!

All Auricon Cameras are sold with a 30 day money-back guarantee. You must be satisfied!

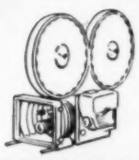


Write for your free copy of this 74-page Auricon Catalog

Auricon Hollywood

16MM SOUND-ON-FILM CAMERAS

CINE-VOICE II
$795.00 & UP
100 ft. Runs 2¾ min.



AURICON SUPER-1200
$5667.00 & UP
1200 ft. Runs 33 min.

AURICON PRO-600
$1871.00 & UP
600 ft. Runs 16½ min.

AURICON

a product of

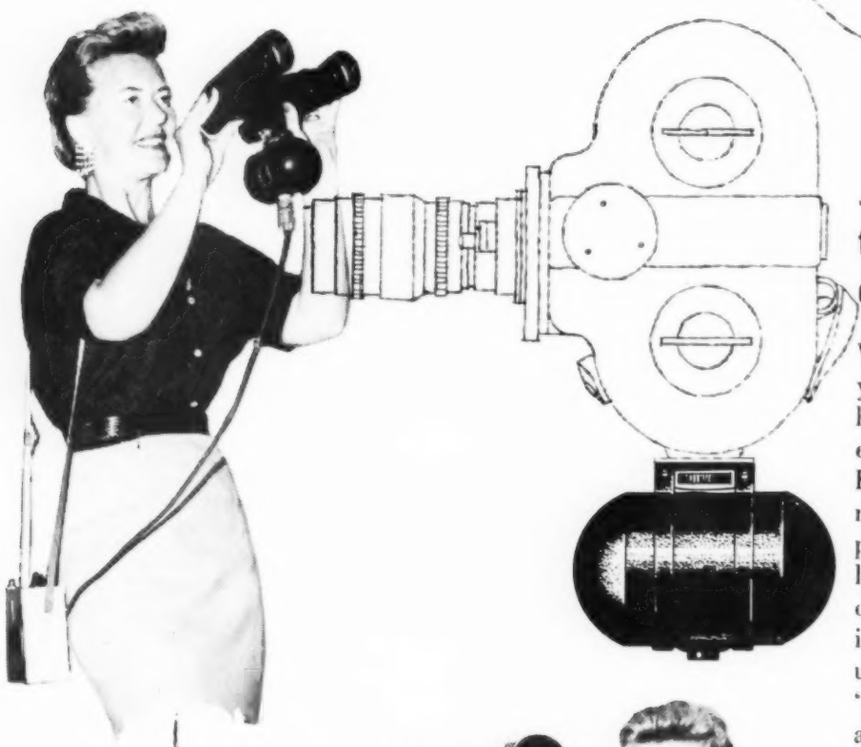
BERNDT-BACH, INC.

6902 Romaine Street, Hollywood 38, California
HOllywood 2-0831

MANUFACTURERS OF SOUND-ON-FILM RECORDING EQUIPMENT SINCE 1931

INVISIBLE TRIPOD...

takes the "HEART BEAT" out of your hands



...a new gyroscopic instrument for stabilizing hand-held optical equipment

When using telephoto lenses even your heart beat, transmitted to your hands, can produce movement enough to disturb the image. The KENYON STABILIZER opens a new field in motion picture and still photography... enabling long focal length lenses to be used *hand-held* on movie and still cameras, producing crisp, sharp pictures even when used from moving vehicles. You get "tripod control" without the bulk and encumbrance of a tripod. Pans and tilts are smooth... rock steady. Used with binoculars from boats, cars, planes and helicopters, effective vision is doubled!

The KENYON STABILIZER controls undesired motion by providing firm resistance to movement through a unique application of gyroscopic principles. Weighing only 28 ounces, the stabilizer is easily attached to a great variety of hand-held optical instruments. Truly portable, it is available with a light weight nickle-cad battery pack. A 115 volt converter is also available.

EXCLUSIVE WESTERN U.S. DISTRIBUTOR

gordon enterprises

Serving the World

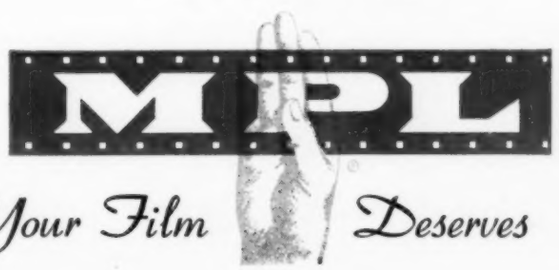
5362 NORTH CAHUENGA BOULEVARD, NORTH HOLLYWOOD, CALIFORNIA • TRiangle 7-5267

FOR DEMONSTRATION AND COMPLETE TECHNICAL DATA, WRITE OR PHONE TODAY

Motion Picture Laboratories Gives You The Master Craftsmanship Your Film Deserves

Motion Picture Laboratories gives you the master craftsmanship your film deserves for the very good reason that only master craftsmen process your films. Besides, Motion Picture Laboratories is *the complete service laboratory for 16mm film producers.* And it is a basic principal at Motion Picture Laboratories, for each individual piece of work, that there be absolutely no compromise with the highest standards of excellence. When, in addition to these advantages, you know you can count on Motion Picture Laboratories for personalized service as well as unsurpassed speed, it is easy to understand why Motion Picture Laboratories is one of America's fastest growing service laboratories. Turn these advantages to your advantage. Send your film to Motion Picture Laboratories. Send it by Air. Send it today!

MOTION PICTURE LABORATORIES, INC.
781 S. Main Street • Memphis 6, Tennessee
Phone WHitehall 8-0456



The Master Craftsmanship Your Film Deserves

PHOTOGRAPHIC ASSIGNMENTS

WHAT THE INDUSTRY'S CAMERAMEN WERE SHOOTING LAST MONTH

ASTERISKS INDICATE TELEVISION FILMS

AMCO STUDIOS

ALAN STENSVOLD, ASC, "Police Station"* "Congressional Investigator"* (Sandy Howard Prods.) Sandy Howard, director.

AMERICAN NATIONAL

WILLIAM WHITLEY, ASC, "Space"* (Ziv-TV) with Bill Lundigan.

CURT FETTERS, "Lockup"* (Ziv-TV) with Macdonald Carey. Henry Hesler, director.

MONROE ASKINS, CURT FETTERS, "Challenge"* (Ziv-TV) with George Nader.

BOB HOFFMAN, RICHARD RAWLINGS, "Bat Masterson"* (Ziv-TV) with Gene Barry.

LAMAR BOREN, "Sea Hunt"* (underwater photography; Ziv-TV) Leon Benson, director.

MONROE ASKINS, "Dawson"* (Ziv-TV) with Keith Andes.

BOB HOFFMAN, "Tenderfoot"* (Ziv-TV) Herman Hoffman, director; Commercials*

CALIFORNIA STUDIOS

VERNON LEWIS, "Navy Industrial Film"* (Roland Reed Prods. Shooting in NY). Arthur Pearson, director.

NICK MUSURACA, ASC, "The Lineup"* with Warner Anderson and Tom Tully.

STUART THOMPSON, ASC, "Have Gun, Will Travel"* with Richard Boone and Kam Tong.

FLEET SOUTHCOTT, "Gunsmoke"* with James Arness and Dennis Weaver.

CASCADE PICTURES

ELWOOD BREDELL, ASC, Commercials*

ROY SEAWRIGHT, Commercials*

COLUMBIA

GERT ANDERSEN, ASC, "Donna Reed Show"* (Screen Gems) with Donna Reed. Oscar Rudolph, director.

OSWALD MORRIS, "Our Man in Havana" (Kingmead Prods.; C'Scope; shooting in Havana) with Alec Guinness and Maureen O'Hara. Carol Reed, director.

JAMES WONG HOWE, ASC, "The Franz Liszt Story" (Goetz Pict.; shooting in Vienna) with Dick Bogarde and Capucine. George Cukor, director.

FRED GATELY, ASC, "Father Knows Best"* (Screen Gems) with Robert Young and Jane Wyatt. Peter Tewksbury, director.

IRVING LIPPMAN, "Tightrope"* (Screen Gems) with Michael Connors.

JACK HILDYARD, "Suddenly, Last Summer" (Sam Spiegel Prods.; shooting in London) with Elizabeth Taylor and Montgomery Clift. Joseph Mankiewicz, director.

CHARLES WELBORN, "Manhunt" (Screen Gems) with Victor Jory and Patrick McVey. Fred Jackman, Jr., director.

HENRY FREULICH, ASC, "Dennis the Menace"* (Screen Gems with Gloria Henry & Herbert Anderson. Wm. Russell, director. Commercials* (Screen Gems).

JACK ETRA, "Stakeout"* (Screen Gems; shooting in Fla.) with Walter Mathan. Harmon Jones, director.

BURNETT GUFFEY, ASC, "Mountain Road" (WideScreen); with James Stewart. Daniel Mann, director.

WILKIE COOPER, "Gulliver's Travels" (UI-Morningside World-Wide, S.A.; shooting in Spain) with Kerwin Matthews and Jo Morrow. Jack Sher, director.

CHARLES LAWTON, JR., ASC, "The Gene Krupa Story" (Philip A. Waxman Picts.) with Sal Mineo and Susan Kohner. Don Weis, director.

HARRY STRADLING, ASC, "Who Was That Lady?" (Ansark-Sidney Prods.) with Tony Curtis and Dean Martin. George Sidney, director.

WILFRED CLINE, ASC, "Because They're Young" (Drexel Films) with Dick Clark and Michael Calan. Paul Wendkos, director.

PHILIP TANNURA, ASC, "Man from Blackhawk"* (Alcoa Theatre; Screen Gems) with Robert Rockwell.

GERT ANDERSEN, ASC, PHILIP TANNURA, ASC, WILFRID CLINE, ASC, "Alcoa Goodyear Theatre"* (Screen Gems)

DESILU STUDIOS—Culver City

KENNETH PEACH, ASC, "Lassie"* (Jack Wrather Prods.) with June Lockhart and John Provost.

ROBERT HAUSER, "Wyatt Earp"* (Desilu Prods.) with Hugh O'Brian.

PAUL IVANO, "The Texan"* (Desilu Prods.) with Rory Calhoun.

CHARLES VAN ENGER, ASC, "Betty Hutton Show"* (Desilu Prods.) with Betty Hutton. Richard Kinon, director.

WALTER STRENGE, ASC, Commercials*

DESILU STUDIOS—Gower

ROBERT PITTACK, ASC, "Ann Sothern Show*" (Desilu Prods.) with Ann Sothern.

CHARLES STRAUMER, "Whirlybirds"* Desilu Prods.) with Ken Tobey and Craig Hill.

DESILU STUDIOS—Hollywood

ROBERT DE GRASSE, ASC, "Danny Thomas Show"* (Desilu Prods.) with Danny Thomas. Sheldon Leonard, director.

WALTER STRENGE, ASC, Commercials*

DISNEY STUDIOS

RUSSELL HARLAN, ASC, "Pollyanna" (Shooting in Napa Valey) with Jane Wyman and Richard Egan. David Swift, director.

WILLIAM SNYDER, ASC, "Texas John Slaughter"* with Tom Tryon and Betty Lynn. Harry Keller, director.

WALTER CASTLE, ASC, "The Little League"* Walter Beaudine, director.

FOX WESTERN AVENUE

JAMES VAN TREES, ASC, "The Many Loves of Dobie Gillis"* with Dwayne Hickman. Rod Amatequ, director.

LLOYD AHERN, ASC, "How to Marry a Millionaire"* with Barbara Eden, Merry Anders and Lisa Gaye. Danny Dare, director.

GENERAL SERVICE

MEREDITH NICHOLSON, "Border Patrol"* (Gallu Prods.) with Richard Webb. Sam Gallu, director.

GOLDWYN STUDIOS

NORBERT BRODINE, ASC, EUGENE POLITO, "Loretta Young Show"* (Lewislor Prods.) with Loretta Young.

INDEPENDENT

BORIS KAUFMAN, ASC, "The Fugitive Kind" (Jurow-Shepherd Prod. for UA; shooting in N.Y.) with Marlon Brando and Anna Magnani. Sidney Lumet, director.

JAMES SEELEY, ASC, Missile Test Project RCA Atlantic Missile Range, Cape Canaveral, Fla.

MORRIS HARTZBAND, "Brenner"* (Kenco; shooting in N.Y.) with Ed Binns and James Broderick. Gerald Mayer and Herman Hoffman, directors.

KEYWEST STUDIOS

WALTER STRENGE, ASC, Series of religious pictures (Family Films). William Claxton, director.

KTTV STUDIOS

JACK MARTA, "Rescue 8"* (Cinefilm Inc.) with Jim Davis and Lang Jeffries. Robert Walker, director.

LINKLETTER PLAYHOUSE

ALAN STENSVOLD, ASC, "People Are Funny"* Herb Atkins, director.

METRO-GOLDWYN-MAYER

GEORGE CLEMENS, ASC, "Twilight Zone"* (CBS).

JOHN NICHOLAUS, "Rawhide"* (CBS-TV) with Eric Fleming and Clint Eastwood.

PAUL VOGEL, ASC, "The Gazebo" with Glenn Ford and Debbie Reynolds. George Marshall, director.

JOSEPH RUTTENBERG, ASC, "Please Don't Eat the Daisies" (Euterpe Prods.) with Doris Day and David Niven. Charles Walters, director.

ELLIS CARTER, ASC, "Peter Gunn"* (Spartan Prods.) with Craig Stevens and Lola Albright.

WILLIAM MARGULIES, "Not for Hire"* (Calif. National Prods.) with Ralph Meeker.

DALE DEVERMAN, "One Step Beyond"* with John Newland.

WILLIAM SPENCER, "Fibber McGee and Molly"* (NBC-TV) with Bob Sweeney and Cathy Lewis.

N.B.C.

ALAN STENSVOLD, ASC, "You Bet Your Life"* with Groucho Marx. Bob Dwan and Bernie Smith, directors.

PARAMOUNT

DANIEL FAPP, ASC, "Li'l Abner" (Technicolor) with Peter Palmer, Stubby Kaye and Julie Newmar. Melvin Frank, director.

Continued on Page 572

Serving the World's Finest Film Makers

ON LOCATION *in the Florida Everglades*

Director of Photography: Jack Etra

The TV series: **"Stakeout"**
The star: Walter Matthau
The director: Harmon Jones
The producer: Ben Berenberg
Production mgr: Hal Schaffel
Director of Photography: Jack Etra
Camera operator: Howard Winner
Ass't Camera: George Silano
Sound engineer: Willard Goodman
Gaffer: Arty Maher

The Mitchell NC has just been set up on a parallel in the middle of a swamp.

The actors have just finished rehearsing a gruelling hand to hand fight in the water... now they've changed to dry clothes for the take.

The director calls, "Roll sound" ...the sound engineer yells, "Speed"... Jack Etra says, "Camera"...

This is the magical moment...

The camera switch is pressed ...the entire company freezes in position...holding their breath...

...and the camera starts...the film rolls merrily thru.

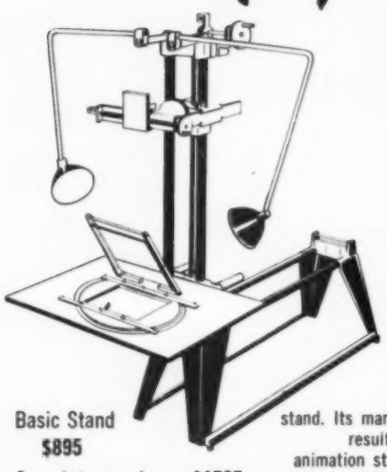
"Sticks"...then "Action"...and before long another scene in "Stakeout" is in the can.

This is a true story. But it could have had a very different ending. Just suppose the camera had failed to start...or broke down during the take...or was unsteady or unreliable. How much does a lost hour's or day's time cost? Where do you go for emergency repairs in the Everglades? Columbia Screen Gems took no chances. They rented all the cameras and accessories from F & B, secure in the knowledge that every single item was perfectly adjusted, checked and re-checked and delivered in top working order. And the fact is that for three months, under the most gruelling conditions of heat, humidity and jouncing around... F & B's Mitchell cameras worked flawlessly every minute. We don't mean to minimize the on-the-spot maintenance and care performed by Jack Etra's excellent crew too...We are simply reminding you that reliability is the keyword at Florman & Babb. It is our most important product.

FLORMAN & BABB, INC.

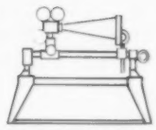
68 West 45th Street, New York 36, New York • MUrray Hill 2-2928

the Triplex

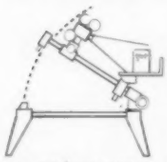


Basic Stand **$895**

Complete as shown **$1595**



2—IN HORIZONTAL POSITION
For zoom titles, copy and product and puppet stages—



3—IN DIAGONAL POSITION
Columns can be locked at any angle between horiz. and vert. —for angular zooms in on table which is locked in horiz. position.

ADDITIONAL FEATURES

- Artwork table can be pivoted out of the way so huge artwork can be taped to wall or floor for shooting.
- Smooth-stop motion zooms from three positions.
- Camera carriage compound movement, 10" North-South, 13" East-West.
- Camera zoom range to table—1 to 12 field to floor 1-24 field—
- Each movement driven by lead screw and hand-wheel—
- Each movement registered by counters in 1/100th. of an inch.
- Diagonal or off-center zooms on both animation product stage.
- Animation table with 2 peg bars moving 16" registered with scale in 1/20th. of an inch.
- Animation table rotates for spins and diagonal pans—registered in degrees.
- 9 x 12 hole through table top for rear lighting and rear projection.
- Platen is hinged—platen glass is Gimbal mounted.
- Entire construction of steel and cast aluminum—resting on 4 adjustable leveling feet.

Florman & Babb proudly introduces the all new TRIPLEX, a top quality precision designed animation stand. Its manufacture and workmanship assures you of the highest quality results. The F & B TRIPLEX costs less and does more than any other animation stand now available. It will accommodate Arriflex 16, or 35mm., Eyemo, Maurer, Mitchell, Cine Special, Bolex and all 4 x 5 Still Cameras.

Portman Animation Stand

Here is the Portman Animation Stand with many new and exclusive features. A rugged, precision and versatile animation stand that offers more than 40 accessories for special animation and effects. Come in and see why it's the biggest and best buy in animation stands today.

Basic stand with 56" Zoom.. **$1495**

Basic Compound with table-top, 2 peg tracks, rotary movement, crank and platen **$1790**

REEVES SOUNDCRAFT MAGNETIC FILM AND MAGNA-STRIPE IS NOW AVAILABLE AT F & B:

Hollywood-favored Soundcraft Full Coated Magnetic Films can now be purchased at F & B. Florman & Babb is proud to welcome Reeves Soundcraft Corporation to its family of quality professional motion picture supply manufacturers, whose products F & B proudly sell and unconditionally guarantee. The next time you need any of the Reeves quality Magnetic Films—35mm Edge to Edge Full Coated, 35mm Clear Edge Full Coated, 17½mm Full Coated, 16mm Full Coated—16mm Magna Striped Raw Stock- you'll find it at Florman & Babb.

Magic "Mylar"

This amazing sprocketed splicing tape will repair torn and damaged films, replace torn perforations and allow you to butt-splice without losing a single frame. Comes in transparent for film, opaque for magnetic film. Splice will never come apart and perforations stay permanently repaired with Magic "Mylar."

Transparent—For Film

	per roll
16mm.—Single Perf.	$5.00
16mm.—Double Perf.	5.00
35mm.	9.00

Opaque—For Magnetic Film

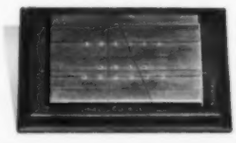
	per roll
16mm.	$ 6.60
35mm.	11.00

F & B proudly announces the exclusive distribution of the Miller Fluid Heads in the Eastern United States. The Miller Head is the world's finest precision built hydraulic drive pan head, and is designed for super-smooth panning and tilting. Can be used with any movie camera.

Model D (medium duty)	$150.00
Swivel leveling joint	59.50
Pro Head (heavy duty)	299.50

Fits all Tripods. Write for complete information and literature NOW.

F & B Butt Splice & Film Repair Blocks



These excellent blocks make butt splicing and repairing damaged film strips simple as A-B-C. Easy to use, no complicated parts, and solidly constructed they are available in the following models:

Model B-16 for 16mm. film . . . . . $ 9.50

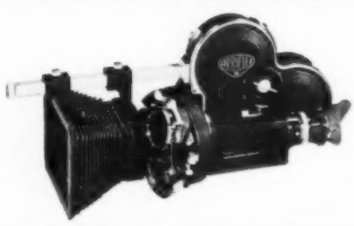
Model B-35 for 35mm. film 12.50

Model BSB - Combination block for 16mm., 35mm. and ¼" tape 24.50

THE NEW ARRIFLEX 16

THE VERSATILE CHOICE OF PROFESSIONALS ALL OVER THE WORLD

The world acclaimed and unexcelled Arriflex 16 adds three new features to its already long list of impressive features and achievements. Automatic buckle switch, new sprocket roller guide assembly, and a motor-cable catch lock are a few of the new features. The Arriflex 16, today is the most wanted professional 16mm. camera, can be seen at Florman & Babb along with other fine professional motion picture products.

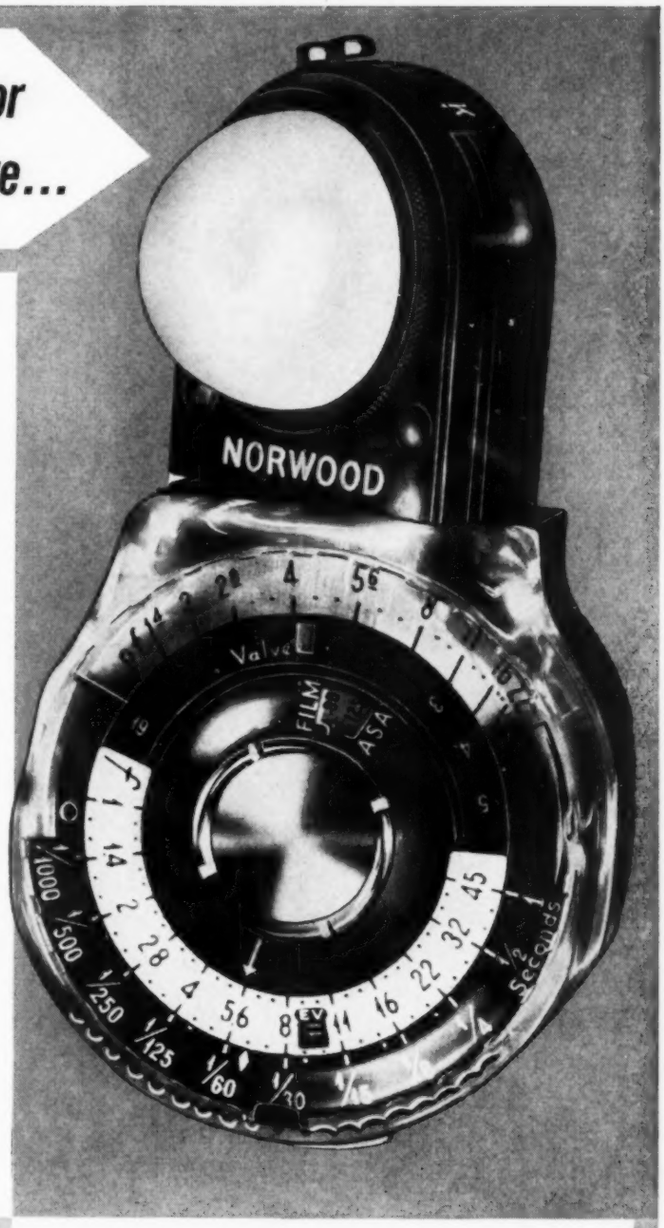


F & B LEG-LOK TRIANGLE

Sturdy metal triangle locks tripod legs in position. One man can move camera, tripod, and triangle. Gives absolute safety and rigidity on wooden, composition, concrete, metal and slippery floors. Price $3.95

68 West 45th Street, New York 36, New York • MUrray Hill 2-2928

The whole secret of good color photography is right here...



GENUINE

Walz

NORWOOD

Super Director

Exposure Meter

High-Fidelity Color Exposures are now yours everytime — Automatically! — The three-dimensional Incident Light Norwood Heliosphere assures you of the absolutely correct exposure setting under all conditions with one quick reading. The exclusive Norwood Heliovalve gives you an automatic direct-reading f: stop for pre-adjusted film and shutter combinations.

No wonder the new NORWOOD is the favorite of Hollywood professionals!!!

The world's only *genuine* Norwood Exposure Meter now made! The Automatic Norwood Super Director made by the Walz Company, is the new invention of Mr. Donald Norwood, world-famous inventor of the Norwood system of three-dimensional incident light exposure control.

$19.95 COMPLETE

Includes Norwood Meter, Case, Neckstrap, 3-D Incident Light Heliosphere, Reflected Light Heliogrid, Automatic Heliovalve.

Walz 8mm MOVIE EDITOR

Ultra-precision compact folding editor. Geared rewind. Bright, sharp screen. Built-in marker, focuser, framer with Quicksplice.

$34.95

Walz MOVIE METER

Easiest-to-use movie meter. Direct reading f:stop for movie cameras. No dials! No calculations. Pre-set for Daylight Kodachrome, Type A Kodachrome and Anscochrome.

$5.95

case . . . $1.35

Walz OPTICAL SUPERIMPOSER TITLER and WIPER OUTFIT

Attach to movie camera and use at the same time as the scene is being photographed. Very simple to use. Fully complete with accessories.

$19.95

Walz MOVIE TIMER

Attaches directly into cable release. Adjustable from 5 to 20 sec. Signals START when timer activates shutter. Cuts shutter off at pre-set time.

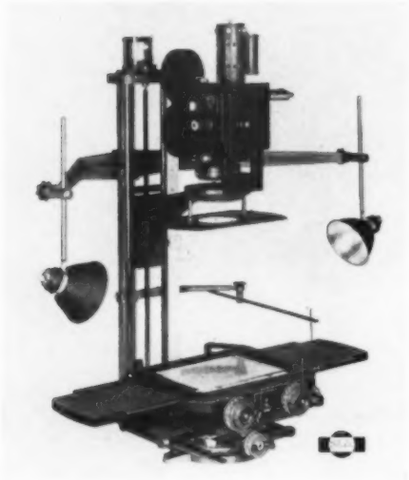
$6.95 with case

EXCLUSIVE U.S.A. IMPORTER.....U. S. PHOTO SUPPLY CO. INC., 6478 SLIGO MILL ROAD, WASHINGTON 12, D. C.

EXCLUSIVE CANADA IMPORTER . . . MAIKO OPTICAL & PHOTO PRODUCTS, 1765 KEELE STREET, W. TORONTO, ONTARIO

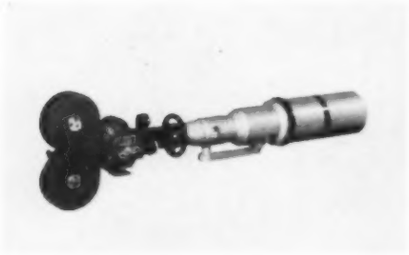
WHAT'S NEW

in equipment, accessories, services



Light-weight Animator

Bowlds Engineering, 1507 N. Kingsley Dr., Los Angeles 27, Calif., announces a new, lightweight table model animation stand that will handle a wide variety of animation work, special effects, titles, and film strip production. Unit features motorized vertical drive and an exclusive self-adjusting electric platen. Other features include precision high-speed calibration system, special camera mount with full drift compensation, adjustable tracking pantograph, photographic light and argon backlight. A full line of accessories is also available.



Ultra Tele Lens

Sterling-Howard Corp., 561 East Tremont Ave., New York 57, N.Y., is distributor for Astragon long-distance telephoto lenses and supports. Lens, available in 880mm f/5.0 and 100mm f/6.3, features coated elements, diaphragm stops to f/22, built-in interchangeable filter slot with haze filter, 25-power optical focusing magnifier, and focusing wheel. Mount is sturdily constructed of durable, corrosion-proof aluminum alloy. Prices start at $495.

Tripod Head

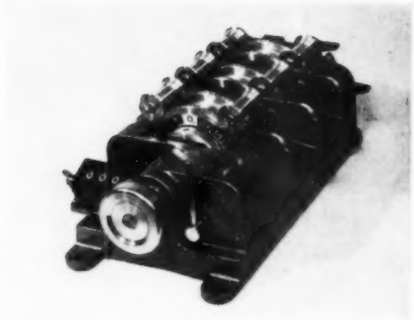
A large size Vidicon camera pan and tilt head ideally suited for use with many motion picture cameras is offered by Camera Equipment Co., Inc., New York, N.Y. Built-in counterbalance readily equalizes weight of camera, allowing operator to pan and tilt smoothly. Features include pan locking lever affording variable tension control, massive tilt-lock, 3/8" camera tie-down screw and long panning handle with rubber grip. Construction is cast aluminum and stainless steel, with grey crackle finish.

Unit is recommended for use with all Auricon cameras, 16mm and 35mm Arriflex, Mitchell 16 and Maurer 16.

List price is $325.00.

Unitized Synchronizers

Precision Laboratories, 1037 Utica Ave., Brooklyn 3, N.Y., announces a new line of unitized, add-on-type, film synchronizers which enables users to increase its film handling capacity by simply adding additional units. Add-on film sprocket assemblies are available for both 16mm and 35mm film and feature precision ball-bearings and oilless bearings throughout, dural tension rollers, finger-tip release, convenient handwheel, individual frame movement—shaft slip lock, and simple coupling method for unitized assemblies. Combination synchronizers are also available.



460-volt Cinetron

A color temperature control unit with 460-volt input is announced by Forney Films, Cinetron Division, 1802 LaPorte Ave., Ft. Collins, Colo. New unit will also take 230-volt current and is equipped with six 30-amp. rated output receptacles and six-position Ohmite selector switches.

Thirty-amp. circuit breakers are used on all outlets, with a 90 amp. breaker on the 230-V input and 50 amp. breaker on 460-V input. Two accessory 115-V grounded receptacles have 15-amp. mini-breakers for operating cameras or other equipment. Two G-E meters indicate line draw and input voltage. A Simpson Kelibrator meter shows actual color temperature values of any of the six power outlets, and selector switches permit balancing or blending of light clusters at any temperature up to 3400° K.

CHIEF ZANAKOBI HAS CUT HIS PRODUCTION COSTS IN HALF, SINCE HE RENTED ALL HIS EQUIPMENT FROM Charles Ross
RENTALS
SALES SERVICE
Send for a schedule of rental rates.
Charles Ross INC.
333 West 52nd Street, New York City, Circle 6-5470
LARGEST SUPPLIERS OF MOTION PICTURE, TV AND INDUSTRIAL PHOTOGRAPHIC EQUIPMENT IN THE EAST

THE ONE-STOP SO

Improve Film Titles

with

TEL-Animaprint®

Greatest dollar for dollar value in the industry!

The first sensibly priced HOT PRESS TITLE MACHINE—the answer to economy and precision accuracy in film titling

Prints dry from foil for instant use. Acme pegs assure perfect registration on paper or acetate cells. Prints all colors. This versatile Hot Press produces titles in any language and any style—main titles, subtitles, trailer titles, TV commercials, side films, shadow and third dimensional effects, etc. May be applied to any kind of art, scenic or live action background, including photographs.

Latest Electronic TEL-Animaprint

Type heated at constant rate automatically* despite changes in room temperatures. Accuracy within ± 1° F by Thermistor **$495**

**Fenwal's Patented Control Unit*

Standard TEL-Animaprint with manual control **$435**

Write for brochure ®*Reg. Trademark*

Cameraman's Dream

BODY-BRACE CAMERA POD

Only $29.95

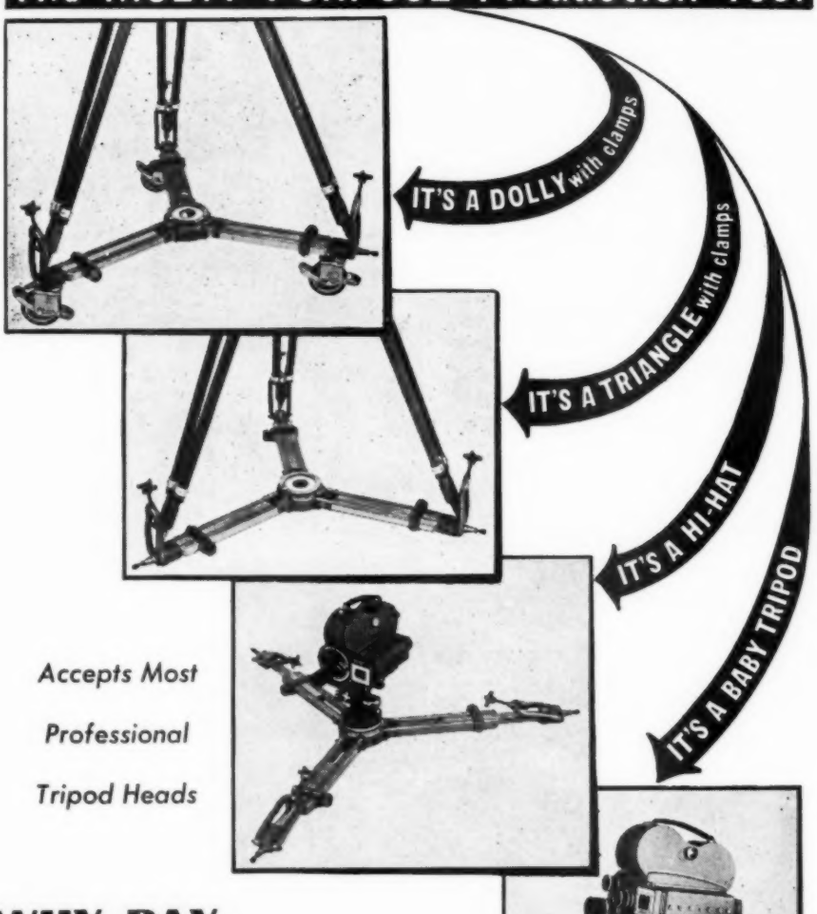
For any size 8mm, 16/35mm movie and still cameras. The double support of S.O.S. Body-Brace Camera Pod, shoulder and body brace, provides extra steadiness and comfort. Absolutely non-slip. A vast improvement over any present models. Your cameras will always be rock-steady and perfectly focused, any place, any time.

- Makes it easy to take difficult angle or action shots—parade, flash shots, horse racing, basketball, track meets, bowling, etc.
- Holds camera with 200' or 400' magazines.
- When camera is on Body-Brace Camera Pod it will always be ready for instant shooting and your photography will be far better. Fits comfortably and snugly.
- Easily portable, lightweight cast aluminum, weight 3½ lbs., folds compactly.

Write for illustrated brochure

Versatile S.O.S. Versa-Dolly

The MULTI-PURPOSE Production Tool



Accepts Most Professional Tripod Heads

WHY PAY:

- **$ 75**—for a Baby Tripod.
- **$ 32**—for a Tripod Triangle with clamps.
- **$ 22**—for a Hi-Hat.
- **$ 72**—for a Dolly with clamps.

Total **$201** . . . **Get This** → **MULTI-PURPOSE S.O.S. VERSA-DOLLY**

FOR *Only* $99.50

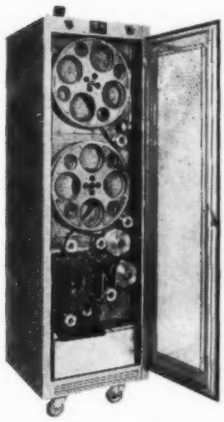
Case for Versa-Dolly (holds also Tripod Head) **$9.95**

It Pays to Check with S.O.S. Before Buying Equipment

Here, at S.O.S., the *"One-Stop Source of Supply,"* occupying an entire building, you will find at all times an enormous stock, more varied and more complete than any in the industry . . . ofttimes we are able to offer savings seldom found elsewhere.

URCE OF SUPPLY!

TEL-Amatic® 16/35 mm Neg/Pos FILM CLEANER



The S.O.S. TEL-Amatic Film Cleaning Machine is a modern JET-SPRAY cleaner for BOTH 16mm & 35mm Negative & Positive Film

Extensive laboratory tests using films with the softest emulsions have proven excellent results.

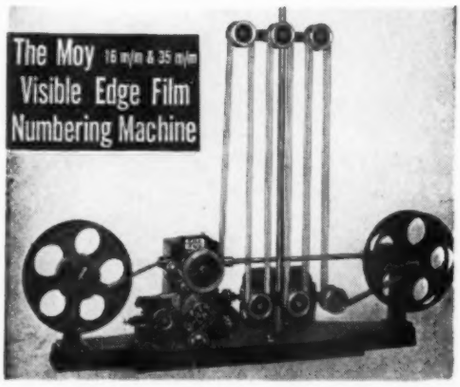
- **Jet-Spray Film Wash for BOTH 16mm and 35mm Film.**
- **Curved Vacuum Air-Blast Squeegees** (pat. applied for).
- **Special Non-Scratch Buffers.**
- **Requires Only 15' of Leader.**
- **Automatic Operation—Pushbutton Control.**
- **Designed for Originals and Release Prints.**
- **Continuous Air and Solution Filtering.**
- **Electric Solution Level Indicator.**
- **Complete operation VISIBLE at all times.**
- **Variable Speed DC Drive.**

You Cannot Damage Film With TEL-Amatic!

TEL-Amatic also features silent belt timing drive, 3000' capacity, speed in excess of 10,000' per hour and fine precision workmanship. *Does more work and better than machines twice the price! One person can handle a battery of TEL-Amatics—a great labor saver.*

ONLY $2950 ®*Reg. Trademark*

Film Numbering Pays Off



Unnumbered films cause confusion and loss of time! The MOY edge numbers every foot of 16, 17½, 35mm film. Simplifies task of checking titles, footage. Replaces cue marks, perforations, messy crayons, punches, embossing, etc. which mutilate film. Work print sshowing special effects, fades and dissolves require edge numbering to keep count of frames cut or added. Multiple magnetic tracks in Cinema-Scope stereophonic recordings make edge numbering a MUST.

Only $2475—*Write for illustrated brochure.*

NEW S.O.S. Jr. Tripod

with Professional Grooved Legs

Vastly improved over any tripod in its class!
For TOP PERFORMANCE • Fits all types of medium-weight cameras • Fumble free front star shaped threading knob with angle gears • Telescoping, offset tripod handle with second handle position • Positive pan and tilt locks, with large tightening levers for utmost rigidity and safety—full 90° tilt • Heavy brass main shaft for longer wear, no sticking • Detachable, precision machined friction plate • One-piece aluminum leg locking knobs for quick adjustments, even tension • Guaranteed not to creep • Aluminum leg supports with leg rest ledge—aluminum leg bearings • Extra smooth friction head—guaranteed for 5 years • Professional type grooved legs • Seasoned, solid hardwood legs, all treated and polished—will not stick.

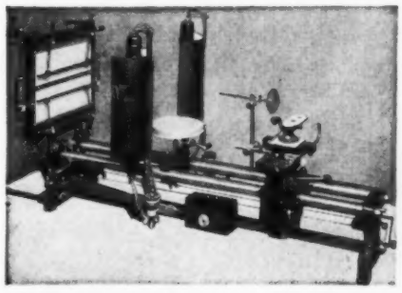
ONLY $145

Sturdy Fibre Carrying Case $18

Write for illustrated brochure.

Titler and Special Effects Kit

For Top Professional Results!



Produces widest range of titles, trick films, cartoons, animation, etc. Takes most types of movie cameras. Horizontal and vertical operation. Table adjustable north, east, south, west. Title board size 7⅛"x9½" with tipping frame, overall dimensions 40" x 15" x 12", weight 40 lbs. Complete with all accessories.

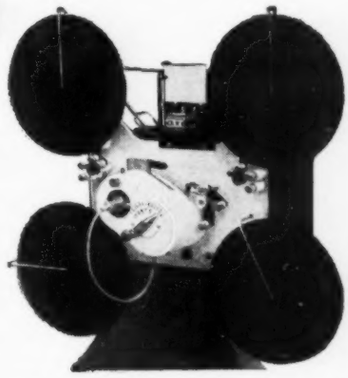
- Twin lamps with reflectors for front and rear illumination.
- Title card frame, platens at top and bottom.
- Distance scale for correct setting of camera lens.
- Running plus climbing title device for producing any number of title lines. Turntable for rotating titles, small objects and many other purposes.

Write for brochure

MODEL TG II, 16mm **$175**
MODEL TG III, 16mm **225**
MODEL TG IV, 16/35mm (illustrated) .. **325**

Produce Rock-Steady Prints with

the famous TEL-Amatic® PRINTER



PROFESSIONAL continuous contact sound and picture printer for double 8mm and 16mm films. Designed for color, black and white, reversal, sound or silent films. TEL-Amatic does all with rock-steady professional precision. Has outstanding features never achieved before in the low cost field.

- Semi-automatic 13-scene mechanical light change for frame light change.
- Large capacity of 1200 feet.
- Four-way aperture for sound, negative to positive, reversal to reversal, and composite at main sprocket.
- Prints over a 40-tooth sprocket for proper registration of negative and positive films.
- Lamp holder accepts CC filters for color printing.
- Footage counter and light change card indicator included.

Write for illustrated brochure ®*Reg. Trademark*

TEL-Amatic Printer complete — ready for bench or table mounting .....**ONLY .$1495**

TEL-Amatic Printer mounted on heavy floor pedestal .....**ONLY $1650**

"The Department Store of the Motion Picture Industry"

S.O.S. CINEMA SUPPLY CORP. 602 WEST 52nd ST., NEW YORK 19, N.Y. *Phone:* PLaza 7-0440 *Cable:* SOSOUND

S.O.S. EST. 1926

WESTERN BRANCH — 6331 Hollywood Boulevard, Hollywood 28, California — *Telephone:* HOllywood 7-2124

For More Information On Adverisers' Products or Services . . .

Every advertiser in this issue has available pamphlets or other literature illustrating and describing his products or services beyond the capabilities of the limited space afforded in his advertisement.

You are invited to write to these advertisers for any information you may desire.

Advertisers appreciate direct inquiries from readers because it shows a bona-fide personal interest in their product or services — as against the mass inquiry post card type of communication. This is why we have never adopted this type of promotion.

When inquiring, write on your business letterhead when possible—although a post card will bring you equally prompt response.

And we'd appreciate it very much if you'd tell them you saw their advertisement in . . .

AMERICAN CINEMATOGRAPHER

Read the world over—wherever movies are made!

TECHNICAL QUESTIONS & ANSWERS

Conducted by Walter Strenge, A.S.C.

QUESTIONS relating to cinematography or other phases of film production are invited from readers and will be answered by letter by Walter Strenge or by other qualified members of the American Society of Cinematographers. Questions and answers considered of general interest will appear in this column.—*Ed.*

Q When looking through the 'through-the-lens' viewer of the Mitchell BNC camera, I observe a hairline scribed on the extreme right of the groundglass, also—in the center—a rectangle of smaller size with rounded corners centered by crosshairs.

Is the hairline scribed on the right to indicate the area that will be occupied by the sound track in the print? If so, is the entire ground glass area the 'Academy' aperture, and the area left of the vertical hairline the projection aperture? And is the area with the rounded corners the so-called 'TV frame'?—*P. R. N., Washington, D.C.*

Answer: It is difficult to give you a definite answer to your compound question because your description of the groundglass scribing suggests a scribing other than what is normal for BNC cameras. Practically most, if not all, groundglass patterns are as follows: the regular full-aperture area is opaqued and the groundglass is scribed to represent the standard accepted Academy aperture, which is .825" by .600". It is no longer the practice to scribe the soundtrack area on the groundglass. Actually, there is a greater picture area exposed on the negative than is indicated by the scribing; then, in printing, allowance is made for the soundtrack.

The so-called "TV frame"—when such is provided—is scribed within the area of the Academy aperture on the groundglass. There are various dimensional standards for this, among the most common being .716" by .537". It is considered good practice, however, that the area outside this dimension be kept clear of all interfering media.

In answer to the "rounded corners" question: this seems to be an optional whim to satisfy a visual pattern. Most groundglass corners are square.—*Ellsworth Fredricks, A.S.C.*

Q I am about to tackle for the first time the preparation of A & B rolls for printing. I have the following equipment for this work:

1. Three-gang 16mm synchronizer with footage and frame counters.

2. B&H 16mm Filmotion editor with 2,000-ft. rewinds and reels and provision for adapting this unit to handle three or more reels on one rewind.

3. B&H 16mm film splicer that makes cut on the frame line.

4. A 16mm optical sound reader.

Is there any additional equipment I should have? I understand that original Kodachrome A&B rolls should be marked for effects, etc., with Kum-Kleen labels. Where can I get them?
—*R. K., Seattle, Washington*

Answer: You have basically the right equipment. Things you might add are cotton gloves, scissors, and possibly a stylus marking device for indicating on film where splicing is to be done after matching is completed. Any additional equipment you may need, including the marking labels, can be purchased from most of the larger camera stores.—*Ted Fogelman, A.S.C. Associate.*

Q I have a Cine Special II with 25mm and a 15mm lenses. I would like to produce a horizontal distortion effect similar to that achieved by the photographer Weegee in his short film on New York. If this effect was achieved with a wide-angle lens and a distortion mirror, how would one achieve correct illumination and focusing on such a mirror? Can you suggest a simpler way to achieve the distortion effect?—*D. L. A.*

Answer: As I recall, the effects in Weegee's film were produced with a

Continued on Page 570

We are proud to offer the newest, most complete motion picture equipment rental catalog available

- CAMERAS — 16 & 35MM
- SOUND RECORDERS
- EDITING EQUIPMENT
- LIGHTS
- INSTRUMENTATION CAMERAS

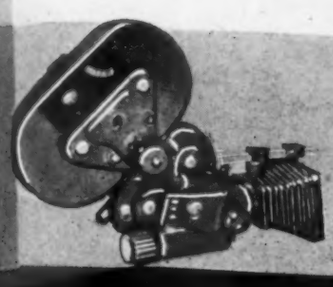
Write for Your Copy Today . . .

BIRNS & SAWYER **CINE EQUIPMENT**

6424 SANTA MONICA BOULEVARD · HOLLYWOOD 38, CALIFORNIA · TELEPHONE: HOllywood 4-5166

Producer	Productions Filmed with ARRIFLEX	Sponsor
PAUL HANCE PROD. New York, N.Y.	The Nature of Glass	Corning Glass Works
HARTLEY PROD. INC. New York, N.Y.	Report Films	Bell Lab. (U.S.A.F.)
	Report Films	Bell Lab. (U.S. Army)
	Progress Report 1956	I.B.M.
	Man From Missouri	Asbestos Cement
	Wings to Hawaii	Pan American World Airways
	In Every Man's Heart	Pan American World Airways
	Lets Have a Luau	Container Corp.
	Pattern of Safety	Monsanto Chemical
LEO TRACHTENBERG-HARVEST FILMS New York, N.Y.	Cooking Can Be Fun	Corning Glass Works
	For All the Children	Herald-Tribune Fund
	Science Fights Tooth Decay	U.S. Government
	A Fair Chance for Tommy	Nat'l Soc. for Prev. of Blindness
INSTITUTE OF VISUAL TRAINING New York, N.Y.	Friend of a Friend	Glanes Dog Research
INTERNATIONAL FILM FOUNDATION New York, N.Y.	Japan	Self Produced
HERBERT KERKOW INC. New York, N.Y.	Progress Report #3, #4	Bell Tel. Lab. Inc.
VICTOR KAYFETZ PRODUCTIONS New York, N.Y.	Prototype Progress Report	Bell Tel. Lab. Inc.
KLAEGER FILM PROD. New York, N.Y.	Angled Deck Carrier	U.S. Navy
	TV Commercials for:	U.S. Rubber (Fletcher D. Richards Inc.) General Motors, Pontiac (MacManus John & Adams) N.Y. Stock Exchange
KNICKERBOCKER PRODUCTIONS New York, N.Y.	Your Share in Tomorrow	McGraw-Hill Book Co.
	Sociology	U.S. Air Force
ROBT. LAWRENCE PRODUCTIONS New York, N.Y.	The Norad Story	U.S. Information Agcy.
	Fuel Element Story	Van Sant Dugdale, Inc.
	Koppers	Young & Rubicam Inc.
	Spic and Span	Vickers & Benson Ltd.
	King's Beer	Castor, Farrell, Hilton & Chesley
	Smith Brothers	Ellington & Co., Inc.
LEIGH PHOTOGRAPHS Trenton, N.J.	Cities Service	Reach McClinton, Inc.
ARTHUR LODGE PROD. New York, N.Y.	Prudential	Thermoid Co.
LORD & TANN, INC. Troy, N.Y.	Thermoid Brake Service	Independent Prod.
	Vacation Afloat	Nat'l. Assoc. of Mfrs.
	Industry on Parade	
	Saratoga Feature Races	Saratoga Raceway
	Weighing While Conveying	Cashin, Inc (Albany Division Tobin Packing)
JAMES LOVE PROD. New York, N.Y.	Two Weeks with Pay	98th Inf. Div. Arty USAR
	Hero Next Door	Civil Air Patrol
LYBARGER PROD. New York, N.Y.	Needle in the Sky	Civil Air Patrol
	(Materials — Key to Progress)	U.S. Air Force
	A Case for the Future	Case Inst. of Tech.
	You Save Time and Money with a Davidson	The Davidson Corp.
	Proven Guides	Marts & Lundy, Inc.
	Toys	Wershaw-Gould Inc.
MARATHON TV NEWS New York, N.Y.	Voice of Amer. Series	Socony-Mobil Oil
	Crashing the Water Barrier	Socony-Mobil Oil
	Challenge on the Lake	Sikorsky Aircraft
	This Way Up	Volkswagen, GmbH
	Five Miles West	Budd Company
	A Report from Budd	IBM, American Airlines, Socony-Mobil Oil, Trans-World Airlines, General Dynamics
	Over 100 Newsfilms for:	

Producer	Productions Filmed with ARRIFLEX	Sponsor
DONALD S. MC CHESNEY Ithaca, N.Y.	The Birds of Kenya	Self Produced
	The Turkana Country	Self Produced
	Preparation of Bird Skin	Self Produced
MICHENER & O'CONNOR Harrisburg, Penn.	Man to Know, Rep. Hugh Scott	Repub. State Com.
	TV Spot	Penn. Bankers Assoc.
MODE ART PICTURES Pittsburgh, Pa.	Recently Purchased No Picture Credits	
M.P.O. PRODUCTIONS New York, N.Y.	Equation for Progress	Ford Motor Co.
	Ford Stylist	
	The Return	Amer. Physical The[py]
	A Mile to Eldorado	Reynolds Metals
	The Big Train	N.Y. Central R.R.
	New Shade of Green	U.S. Air Force
	Design for Dreaming	General Motors Co[rp]
	The Good Seed, Horse, Calf and Egg	Eli Lilly
	The Man in the Doorway	American Cyana[id]
	Fibers in Civilization	Chemstrand Co.
	Hound Dog	Remington Arm
	Petrified River	Union Carbide
MULLER, JORDAN & HERRICK New York, N.Y.	More Time for Spelling	McGraw-Hill
	The U.S. Indus. Park	Socony-Mobil [O]il
	The Atom comes to Town	Natl. U.S. Ch[a]mber Comm.
OWEN MURPHY PRODUCTIONS New York, N.Y.	Notre Dame Story	Univ. of Not[re] Dam[e]
	This is New Jersey	N.J. Bell Tel[ephone]
	Shotgun Handling	Field & Stre[am]
	Word is Spreading	Firestone T[ire] & Ru[b]
	4 Spring Dealer Films	Firestone T[ire] & Ru[b]
	Private Line Service	Amer. Tel. Tel. C[o]
NEWSFILM, U.S.A. New York, N.Y.	Deadline: 53 Minutes	United Cerebral P[a]
PATHESCOPE CO. OF AMERICA New York, N.Y.	High Places of the Mind, Small Town U.S.A., Challenge of the Atom, Sanctuary	U.S. Information A[gency]
	Share a Proud Tradition	U.S. Marines
	Sword & Shield, The Intelligence Cycle, Intelligence & You	U.S. Navy
	Better Business Bureau Story	Assoc. of Better Business Bureau[s]
	To Serve the Living	Better Business [Bureaus] & Nat'l Assoc. o[f] Funeral Directo[rs]
JOHN PATRICK Suffern, N.Y.	My Kid Twenty	Self Produced
PENNEBAKER FILMS New York, N.Y.	Brussels Film Loops	U.S. State Dept.
PHOTO ARTS PROD. Philadelphia, Pa.	Color Tuned	Bestwell Certa[in]
	Public Service	WCV TV
	Esslinger	J. Cox Agcy.
	Sight Series	Wills Eye Hos[p]
	Greystone Wines	Fuer & Tripp
	Torture Tests	Lindura
	Felton Sibley	J.C. Cox Agcy.
	Wish you Were Here	Boy Scouts o[f]
	Judy Lee	Downs Carp[et]
	Services to Youth	City of Phila.
	Case of Protection	Bestwell Co.
	Speedomax	Leeds & No[rth]
DAVID PIEL, INC. New York, N.Y.	Jaymar Ruby Slacks TV Commercial	Ehrlich, Ne[w] Sobo, Inc.
	Puritan Shirts TV Comm.	Ehrlich, N[ew] Sobo, Inc.
ROY PINNEY PROD. New York, N.Y.	Secrets of Nature	Photo & [Film]
Q.E.D. PRODUCTIONS New York, N.Y.	Fashions in Paris	Internat[ional] Studio [Tech.]
	Benny Goodman in Brussels	Vespa, Colum[bia] S.A.
	Vespa in N.Y.	
	This is Avianca	



America's Most Successful
Producers Choose ARRIFLEX!

185* successful producers chose ARRIFLEX

Because of its FEATURES

- TRUE MIRROR REFLEX SHUTTER • FINDER SHOWS BRIGHT IMAGE THROUGH TAKING LENS — even in poor light — no parallax — accurate, easy follow-focus
- ★ REGISTRATION PIN IN PRECISION FILM GATE—insures "rock steady" pictures—no film "breathing".
- THREE LENS DIVERGENT TURRET • VARIABLE SPEED ELECTRIC MOTOR — instantly interchangable for other types—governor controlled—synchronous and animation.

Because of its VERSATILITY

- IT'S A HAND CAMERA—weighs only 6½ lbs.
- IT'S A STUDIO CAMERA—with 400 ft. magazine and synchronous motor.
- IT'S A SOUND CAMERA—with Arriflex Blimp

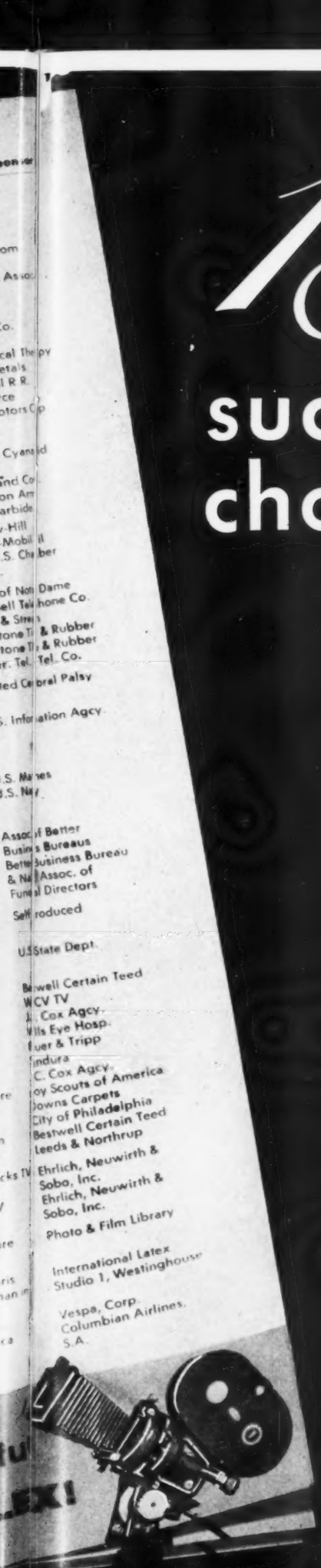
Because of its RUGGED DEPENDABILITY

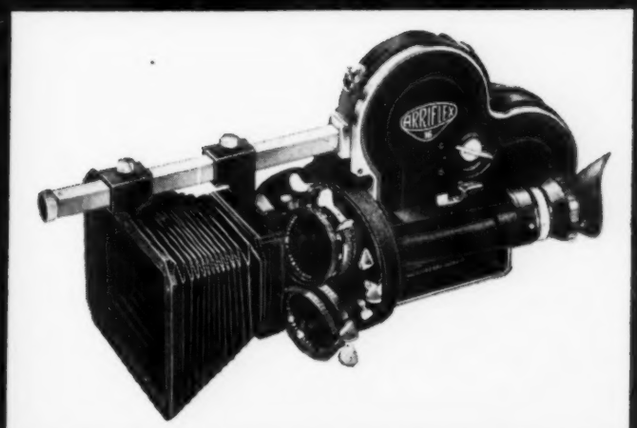
- Proven by Disney Studios in The Tropics and at The Poles and by thousands of satisfied users in U.S.A. and all over the world.

For the complete Arriflex story write for literature.

*Partial list of producers who submitted requested information in time to meet printing deadline.

U.S. State Dept.
Bestwell Certain Teed
WCV TV
J. C. Cox Agcy.
Wills Eye Hosp.
Fuer & Tripp
Indura
J. C. Cox Agcy.
Boy Scouts of America
Downs Carpets
City of Philadelphia
Bestwell Certain Teed
Leeds & Northrup
Ehrlich, Neuwirth & Sobo, Inc.
Ehrlich, Neuwirth & Sobo, Inc.
Photo & Film Library
International Latex
Studio 1, Westinghouse
Vespa, Corp
Columbian Airlines, S.A.



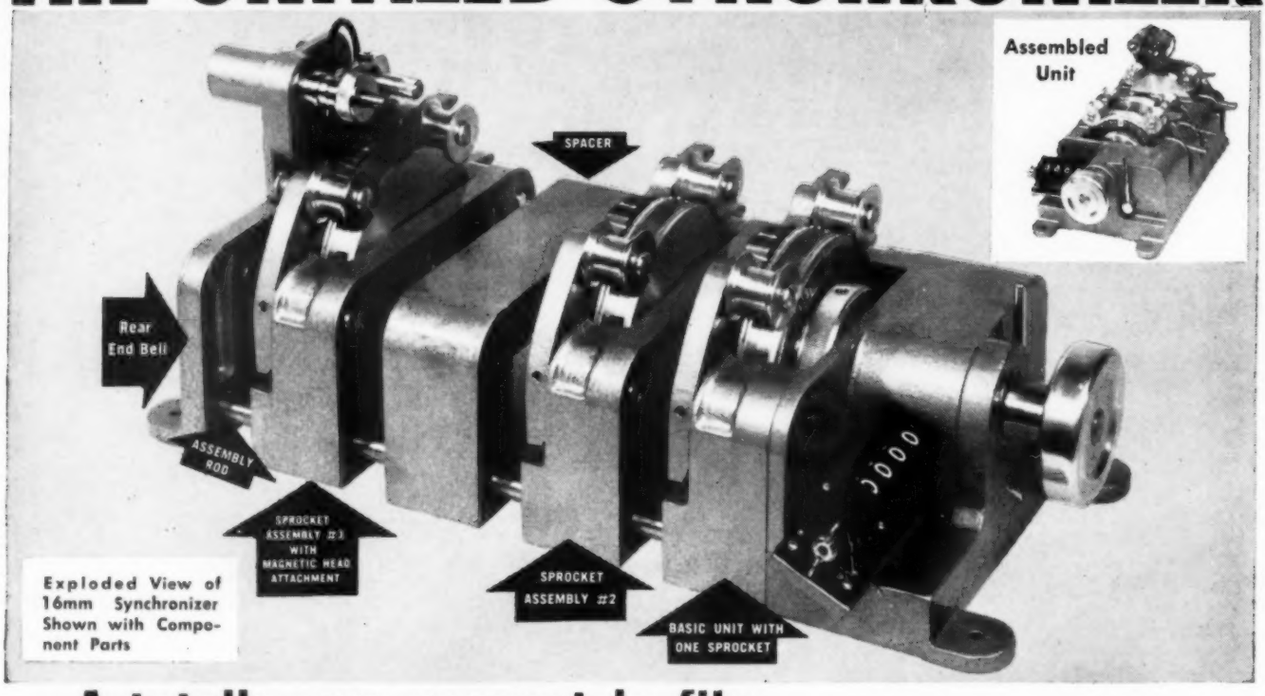


ARRI

ARRIFLEX CORPORATION OF AMERICA
257 PARK AVENUE SOUTH, NEW YORK 10, N. Y.

For sale, rent or lease at your FRANCHISED ARRIFLEX DEALER

ANOTHER FIRST BY PRECISION! PRESENTING
THE UNITIZED SYNCHRONIZER

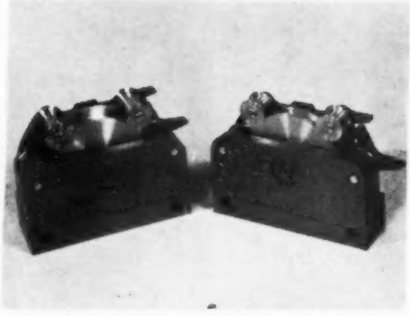

Assembled Unit
SPACER
Rear End Bell
ASSEMBLY ROD
SPROCKET ASSEMBLY #3 WITH MAGNETIC HEAD ATTACHMENT
SPROCKET ASSEMBLY #2
BASIC UNIT WITH ONE SPROCKET
Exploded View of 16mm Synchronizer Shown with Component Parts

A totally new concept in film synchronizers add or subtract units as you need them, when you need them

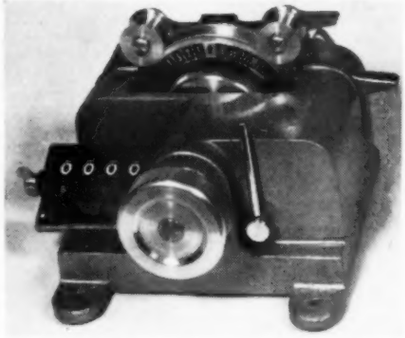
A unitized design concept is incorporated in our entire line. You can now purchase a synchronizer and be able to add-a-unit whenever the need is there. It is not necessary to put your unit aside, because you have outgrown it, or change your mode of operation. We have developed this unitized system to give the film editor a flexible piece of precision equipment.

- Footage Counter — reset type
- Precision ball-bearings & oiless bearings throughout
- Large sprockets to S. M. P. T. E. standards
  16mm—40 frames 35mm—16 frames
- Dural tension rollers — adjusted individually
- Finger tip release
- Perfect control — convenient hand wheel
- Individual frame movement — shaft slip lock
- Table mounting feet with rubber pads
- Attractive hammertone finish
- Simple coupling method for unitized assemblies

COMBINATION SYNCHRONIZERS are also available



Sprocket Assemblies: Left, 35mm; right, 16mm



Model S616-1 One-Sprocket single 16mm unit. Also available in 35mm.

Look for this trademark

For information and prices write:

Designers and Manufacturers of Equipment for the Motion Picture and TV Industries

PRECISION LABORATORIES
DIVISION OF PRECISION CINE EQUIPMENT CORPORATION
1037 UTICA AVENUE BROOKLYN 3, N. Y.

ALL YOUR NEEDS

FROM CAMERA TO SCREEN...

from the world's greatest selection of professional photographic equipment and supplies!

16mm GSAP CAMERA

Magazine load. 24 volt drive. 16, 32, 64 fps. Ideal for instrumentation and other special uses. Complete w/1-3/8" f3.5 lens.

NOW ONLY **59.65**

AMPRO ARC 16mm SOUND PROJECTOR

30 amp. hi-intensity arc, auto carbon feed, rectifier, amplifier and 12" speaker. Top quality 2" proj. lens. Heavy duty stand and cables incl.
LIST WAS $1795.00.

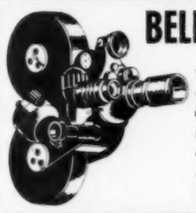
Hollycam Special **795.00**

NEW NEUMADE 16mm REWINDS

2000' capacity. Heavy duty model w/tension adjust. $15.00 list.

1 geared & 1 dummy end—List $15.00 ..... **9.50**

2 geared ends—List $20.00 ..... **14.50**

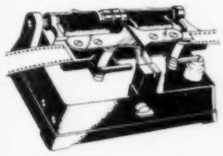


BELL & HOWELL 35mm Eyemo "2"

Complete outfit. 8 to 48 fps. Outfit includes camera w/spider turret & open back, 1", 2" and 6" B & H lenses w/filters and sunshades, new Eyemo motor, power cable, two 400' mags., drive belt and drum finder. LIST VALUE OVER $2000!

ALL THIS FOR **595.00**

GRISWOLD 35mm FILM SPLICER



A Neumade product. For fast accurate splicing on frame line with accurate hole spacing. No adjustments required.

Model R-2, list $32.00 used **13.95**

Model T, NEW w/light and cement bottle. List $45.00 **24.50**

CUNNINGHAM 35mm MOTION PICTURE CAMERA WITH BALTAR LENSES

Only hand held 35mm camera with dual pilot pin registration. 4-lens turret. Weatherproof magnesium body with pistol grips and rifle stock. 3-speed electric motor. 16, 24 and 32 fps. 170° rotary shutter. Eye level finder with fields for 3 lenses.

ORIGINAL COST WAS OVER $7,625.00!

COMPLETE OUTFIT

- Camera w/35mm f2.3 Baltar, 75mm f2.3 Baltar and 6" f4.5 tele.
- 3-speed electric motor
- Integral viewfinder
- 200' magazine w/ Mitchell type pilot pin registration movement
- Carrying case for camera, spare lenses, magazine, film and accessories.

LIMITED QUANTITY **595.00**

PRO JR. TRIPOD

Mfg. by Camera Equip. Co. Height adjusts from 52" to 71". Large camera plate, for even largest 16mm cameras. Smooth pan and tilt. List $150.00.

ONLY **89.50**

Brand new $99.50
Case $9.95

BELL & HOWELL CORDOMATIC REELS

Brand new. Automatically rewinds 50' of speaker cable. Heavy duty metal housing w/spring-loaded core. Adaptable to many other lenses. List $33.50.

SPECIAL **14.95**

Including Cable

16mm FILM

50' Kodak Mag. Plus X Negative	5.95
50' Kodak Mag. Super-X Reversal	3 for 3.95
50' Kodak Mag. Super-X Rev. w/process.	2.75
50' Mag. Linagraph Pan	3 for 3.95
50' Kodak Super-XX Negative	3 for 1.95
100' Outdoor Kodachrome	4.95
100' Microfilm, Unperf.	1.85
100' Kodak Super-X w/processing	2.95
100' Kodak Super-XX Rev. w/process.	2.95
100' Kodak Tri-X Reversal	2.49
100' Kodak Linagraph Ortho	.95
100' Ansco Hypan Reversal	1.95
100' Background-X Negative	1.50
400' Kodachrome Daylight	19.95
400' Super-XX Negative	4.25
400' Kodak Tri-X Negative	4.50
400' Tri-X Neg. Single perf.	4.95
400' DuPont Superior III Neg.	4.25
400' Background-X Neg. Single perf.	4.95
400' Super-XX Neg. Single perf.	4.95
400' Ansco Color Neg. Tungsten	9.50
1200' Background-X Neg. Single perf.	12.95
1200' Tri-X Neg. Single perf.	12.95
Ends, Type 5269 Color print stock 1000'	21.00

CINE SPECIAL CAMERA

SPECIAL OFFER! Fabulous 16mm Kodak Cine Special with 200 ft. film chamber, 110 volt synchronous motor, masks, carry case and 2 Kodak lenses. LIST VALUE OVER $1500.00!

Our price **695.00**

35mm FILM

100' Ansco Color Tungsten Neg.	8.95
100' Eastman Color Negative	8.95
100' Kodak Microfile	3.95
100' Kodak Tri-X	2.75
100' Kodak Photoflure	3.25
100' Kodak' Super-XX	1.90
100' Kodak Background-X	1.65
100' Dupont Superior III	1.80
100' DuPont Superior IV	3.95
100' Kodak Linagraph	1.50
200' Kodak Super-XX	3.80
200' DuPont Superior III	2.45
200' Kodak Linagraph	2.45
400' Ansco Color Tungsten Neg.	29.50
400' Kodak Super-XX	7.95
400' DuPont Superior II	5.95
400' DuPont Superior IV	14.95
400' Kodak Linagraph	5.95
400' Kodak Tri-X	9.95
1000' Kodak Super-XX	18.50
1000' DuPont Superior III ASA 50	13.50
1000' Kodak Tri-X	19.50

Write for your copy of our new catalog, showing hundreds of items for still, cine, and aerial photography. Large section on processing equipment.

Some materials are from former U.S. Gov't stocks. Equipment not listed as new or reconditioned is used. All prices f.o.b. our warehouse.

HOLLYWOOD CAMERA CO.

All equipment is guaranteed to be as advertised. Check with order please, or 25% deposit, balance on delivery. Purchase orders welcomed from D&B rated firms. Minimum order $5.00.

10611 CHANDLER BOULEVARD • NORTH HOLLYWOOD • CALIFORNIA

COLOR IN MOTION PICTURES AND TV

Part I: The three-color theory.

By ROBERT ALLEN MITCHELL

THE USE of full color adds immeasurably to our enjoyment of motion pictures and television. Much of the realism of the modern panoramic theatre screen may be attributed to the skillful use of color; and commercial television is exploring more intensively than ever before the limitless visual possibilities of color. Indeed, it has been authoritatively predicted that most TV broadcasting will be done in full color within the next four or five years.

Widespread use of color in TV is a matter of great concern to the cinematographer whose work has been confined largely to the television field —that is, to *monochrome* TV. He may soon be given color film and color lighting facilities with the admonition to maintain the high artistic standards which have characterized his black-and-white work. When that day comes, the TV cinematographer must adjust his pictorial techniques from the familiar "panchromatic" factors of form, value, and contrast to the new element of color.

The transition from monochrome to *good* color production work is not easy because color film, unlike the adaptive human eye, is brutally "literal" and unable to "accommodate" to the color of set illumination. A sheet of white paper looks white to the eye whether illuminated by candlelight (which is definitely orange), sunlight (which most persons call "white light"), or high-intensity arc illumination (which is relatively bluish). Color film, or the color TV camera, records exactly what it sees—orange paper by candlelight, blue paper by carbon-arc light, and white paper only at a specific predetermined "color temperature."

Because most professional color negative is "balanced" for a color temperature of 3200° on the absolute Kelvin scale (the "whiteness" of high-efficiency tungsten incandescent lamps commonly used for set lighting), a combination of "inkies" for fill lighting and arc lamps for key lighting produces very bad effects on color film unless the arcs, which emit a somewhat bluish light of approximately 6000° K, are filtered by appropriate yellowish gelatins to match the relatively yellow radiation of the tungsten lights.

Similar difficulties are encountered when exterior shots are photographed on 3200° color negative, which is customary in professional work. Direct sunlight during the late morning and early afternoon hours has a color temperature of about 5000° K. In this case the yellowish filter must be placed over the camera lens; and if inkies are used on location to lighten shadows, these must be fitted with bluish filters to match the color-quality of sunlight.

The color-temperature problems of color photography often are aggravated in the studio by line-voltage fluctuations which change the color, as well as the intensity, of tungsten lamps, and out of doors by the varying altitude of the sun, which becomes redder as it approaches the horizon. It is true that minor variations in overall color temperature can be corrected in printing, but the color cinematographer is nevertheless not permitted to forget color temperature for a single moment. The writer believes that this matter is by far the most important of all the several problems attendant upon the switch from black-and-white to color filming.

The reader has now undoubtedly correctly surmised that the term "white" is a purely relative one. On the basis of the older color negatives and the original Technicolor 3-strip camera, white was in the neighborhood of 5000° K, the color of sunlight or low-intensity arc illumination. The new

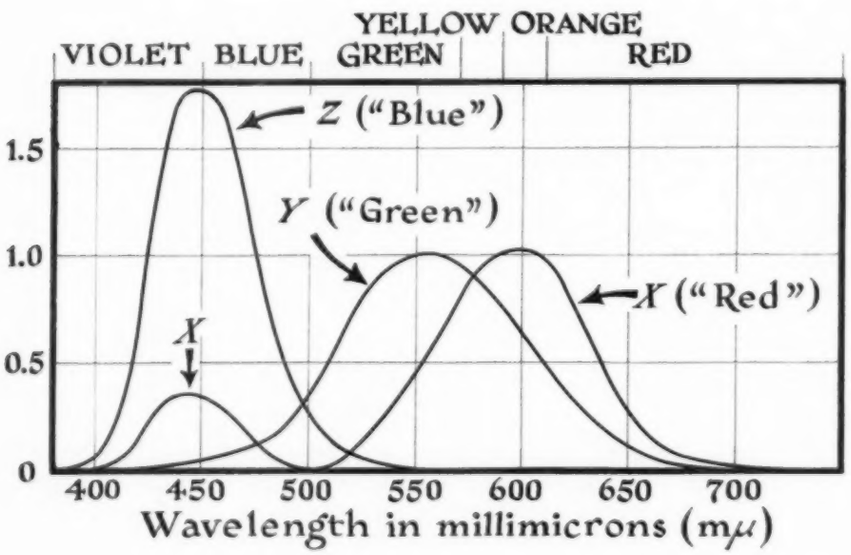


FIG. 1—Response of the normal human eye to the visible spectrum in terms of three primary colors, X (a certain red),, Y (a green), and Z (a blue). Note the overlapping of the three primary "response curves" and the secondary peak of the red curve in the violet region.

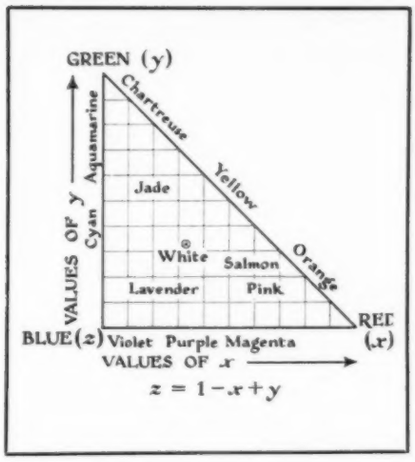


FIG. 2—An "oversimplified" color triangle. The colors produced by additively mixing the primaries, red, green, and blue are arranged along the sides of the triangle. Experiment proves, however, that most of the spectrum colors are more vivid than these additive mixture colors.

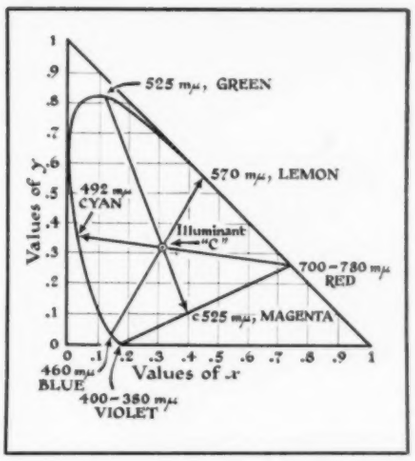


FIG. 3—The C.I.E. chromaticity diagram. By postulating three "supersaturated" primaries, the spectrum colors can be included in the color triangle, where they form a horseshoe-shaped curve known as the spectrum locus. All real colors are contained inside this locus and the "purple line" which connects its two extremities.

highly sensitive color negatives are balanced for the lower (yellower) color temperature of 3200° K. To these films, tungsten light is "white." Certain brands of reversal color films are manufactured in two types, one balanced for 5000° K for outdoor use, and the other for 3200° K for indoor use with photoflood lamps. The two films may be interchanged (with a slight loss of speed) if appropriate correcting filters are placed over the camera lens—a bluish filter for the outdoor film used indoors, and a yellowish filter for the indoor film used outdoors.

There are so many "whites" that it is perfectly proper to regard any and all of them as colors—colors to be recorded as faithfully as red, yellow, lavender, or flesh-tint by the color film or camera. But how are so many colors faithfully recorded and reproduced?

A color photographic film or a color TV camera works on the same simple theory which has often been used to explain human color perception, namely, that the retina of the eye contains three color receptors, each of which responds to roughly one-third of the entire visible spectrum of colors. The "red receptor" sees the wavelengths of light from the longwave extreme in the red through orange, yellow, and chartreuse to the green region. The "green receptor" sees the wavelengths from orange-red through yellow, chartreuse, green, and cyan to blue. The "blue receptor" sees the wavelengths from green through cyan, blue, and blue-violet to the shortwave extreme in the violet (Fig. 1).

The overlapping nature of these three bands of color perception—red, green, and blue—results in the intermediate hues named above; and a re-emergence of red sensitivity in the shortwave region of the spectrum, where blue is the predominant color, is responsible for the violet color of the shortest visible wavelengths. The purples and magentas are hues which do not occur in the spectrum, but they can be produced with maximum purity by combining violet light with red light in various proportions.

Whether this "trichromatic theory" offers the true explanation of color vision or not (scientists are undecided), it stands us in good stead when we wish to devise a practicable color-reproducing system for photography or television. The requirements for a workable color system are thus very simple in theory, though undeniably beset by numerous "bugs" in practice.

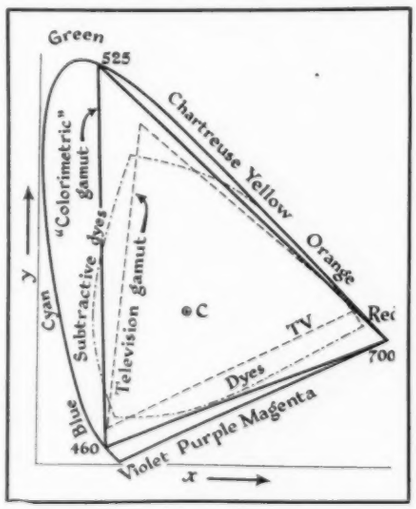


FIG. 4—The color gamuts resulting from certain arbitrary sets of primary colors plotted on the chromaticity diagram. The 700-525-460 millimicron set encloses the widest range of colors, but most of the vivid spectrum colors lie outside even this satisfactory gamut.

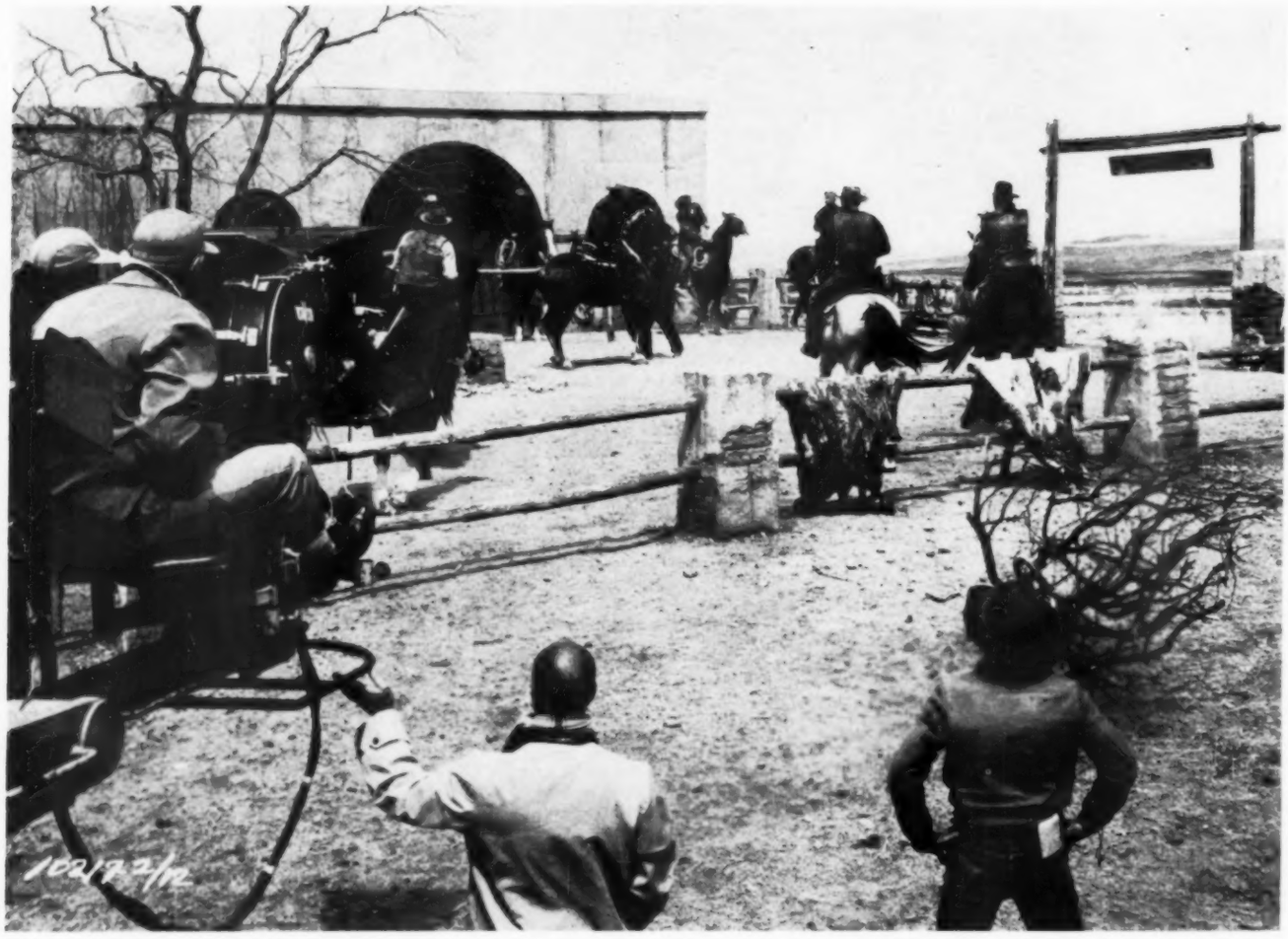
Briefly, in order to photograph a scene in full natural color, we must separately record the red, green, and blue components of the scene. This may be done by using a film having three color-sensitized emulsions (each of which records approximately one-third of the spectrum) or, more directly, by using a camera fitted with an optical beam splitter and three separate films.

The beam splitter produces three identical images of the scene upon which the camera is focused. Over each image is placed a color filter whose transmittance is nearly identical with the response characteristics of the corresponding primary color receptor of the eye. This gives us red, green, and blue "records" of the photographed scene in terms of black-and-white values on a balanced, red-sensitized panchromatic negative.

Three positive transparencies are then printed from the negatives; and these are superposed on a projection screen by three identical projectors set up very close together. Over the lens of the projector showing the print of the red record is placed a red filter, and so with the projectors showing the green- and blue-record prints. The original scene is reproduced on the screen in accurate natural color.

Although the 3-projector process is only rarely employed, it illustrates the "additive" systems advocated for television and makes all other color processes more comprehensible.

Continued on Page 568



DIRECTOR OF PHOTOGRAPHY Charles Lang, ASC, bottom center, looks on as VistaVision camera photographs scene on location for the Hal-Wallis-Paramount production, "Last Train From Gun Hill." Use of crane here provided maximum mobility for the camera.

Photographing "Last Train From Gun Hill"

Carefully selected camera angles give strong dramatic impact to this taut western melodrama filmed by Charles Lang, A.S.C.

By HERB A. LIGHTMAN

"Last Train From Gun Hill," Hal Wallis' production for Paramount release, is a blockbuster of motion picture entertainment that hits the audience with all the force of a pile driver. As robust film fare it derives its tremendous impact from the direction of John Sturges, performances by an unusually able cast, and the magnificent color VistaVision camerawork of Director of Photography Charles Lang, Jr., A.S.C.

"Last Train" is not a western in the usual horse-chase, shoot-'em-up sense. Rather it is a taut, hard-hitting melodrama of human emotions set in a western locale—a clean, direct narrative that hews relentlessly to its story line until the inevitably violent denouement has been realized.

The film seizes attention in its opening sequence when two drunken no-good cowpokes (Earl Holliman and Brian Hutton) rape and murder a beautiful young Cherokee squaw. Her young son steals one of the murderer's horses and races to bring word to his father (Kirk Douglas) who is the Marshal of the peaceful Oklahoma town of Pawley.

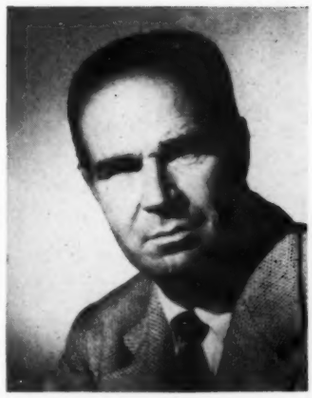
Douglas recognizes the horse's saddle as belonging to Craig Belden (Anthony Quinn) a close friend he hasn't seen in ten years and now absolute ruler of the town of Gun Hill.

With heavy heart Douglas sets out for Gun Hill to apprehend the culprit.

He confronts Quinn with the accusation that his son is the murderer. Quinn is horrified at this revelation, but he cannot bear to deliver his only son up to justice. Douglas warns him that he intends to find the boy and bring him to trial.

Douglas traps the boy in a saloon, knocks him out, slings him over his shoulder an fights his way out of the place, holing up in a hotel to await the train that will take them back to Pawley. Meanwhile, Quinn and his henchmen surround the hotel, determined to set the boy free. In a hair-raising climax, Douglas manages to get his prisoner to the train station, but rapid gunfire from an unexpected quarter and the irony of Fate conspire to cheat him of formal justice, while meting out a well-deserved comeuppance to the guilty party.

Photographically, "Last Train" is a triumph. Director of Photography Lang has slanted the VistaVision camera perfectly to the demands of this virile, knock-down-drag-out drama. His visual treatment of the script lends it largeness of scope while still maintaining the tight-in-the-clinches impact of more intimate action. No stranger to the western motif, Lang has to his credit such outstanding films as "Man From Wyoming," which he photographed for Director Anthony Mann,



CHARLES LANG, JR., ASC

as well as the highly successful "Gunfight at OK Corrall," which he also did with Sturges under the Hal Wallis production banner.

"In a western your exteriors have to be the very best," Lang comments, "because that is what people go to see—the West as they imagine it. You have to select your angles carefully in order to get bigness and space into your compositions. You must convey the immensity of the great outdoors. The best way to do this is to get down low with your camera to show sky and the tops of things."

Wallis, who likes a "big" look in his pictures, and Sturges were both in complete accord with this idea. They chose as their locale a stretch of breathtaking country south of Tucson, Arizona, close to the Mexican border. The ranch exteriors were laid against sweeping brown fields with the edge of a little black mountain on the horizon. About twenty miles away they selected a dry river bed fringed with trees in which to shoot the opening chase and rape scenes. Lang achieved a wonderful feeling of excitement and speed by panning through the trees as the drunken cowboys pursue the Indian girl and her son in their buggy.

The company spent a week filming in these Arizona locations, then moved back to the studio where an impressive construction job recreated the western town and railroad head of Gun Hill on five acres of Paramount back lot. Built at the cost of $100,000, the town was completed in six weeks. It consisted of a hotel, saloon, bank, rooming house, livery stable, dry goods store, sheriff's office and jail, general store, post office and assorted shops. Though this western street was limited in space, Lang managed to lend it the scope of a sprawling frontier town through the use of a low camera and wide-angle lenses.

"Western streets can be very dull photographically unless you adopt low enough angles to show the tops of buildings," he points out. "When you shoot level into things you lose the whole outdoor look. The set might as well be an interior. Low camera positions,especially with a wide-angle lens, make it possible to do wonderful things with diagonal lines — sloping roofs, pieces of sky, tall men standing against buildings. It makes for dynamic composition."

Lang's artistry is no mere outdoor thing; it is equally apparent in the in-

Continued on Page 560

THIS BARROOM scene reveals the low camera angle and realistic lighting which characterizes much of Lang's photography for "Gun Hill."

NIGHT SEQUENCES owe much of their force to fact they were actually shot at night. Note, too, dramatic impact here of low camera angle.

In the west they do what Easterners do...

GO FOR WESTERNS

For sheer entertainment, nothing beats a good motion picture!

What's more, country-wide, people react pretty much the same. Mostly they like Westerns. If the story is good; if the stars are competent; if the photography really *has it*, they talk and—*young and old—flock to the box office!*

In other words, the better the picture the better the box office.

That's why close co-operation with the Eastman Technical Service for Motion Pictures is so important . . . why it pays to tap Eastman's background of experience—to check up on questions of film choice, production, processing. Offices at strategic locations. Inquiries invited.

It's what's on the screen...and what people say about it...that counts

Motion Picture Film Department
EASTMAN KODAK COMPANY
Rochester 4, N. Y.

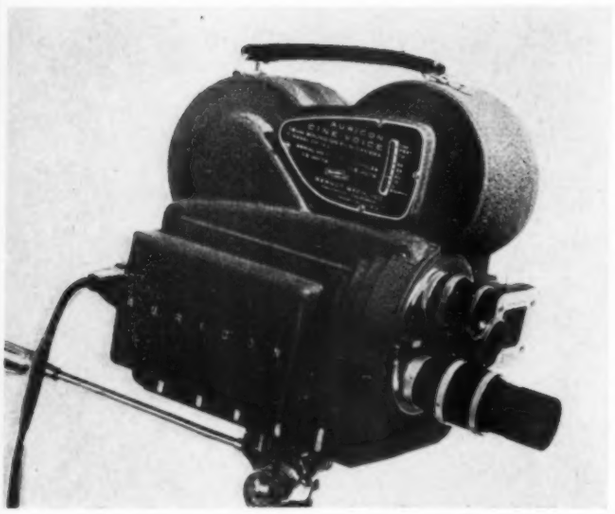
East Coast Division
342 Madison Ave.
New York 17, N. Y.

Midwest Division
130 East Randolph Drive
Chicago 1, Ill.

West Coast Division
6706 Santa Monica Blvd.
Hollywood 38, California

AURICON CINE-VOICE

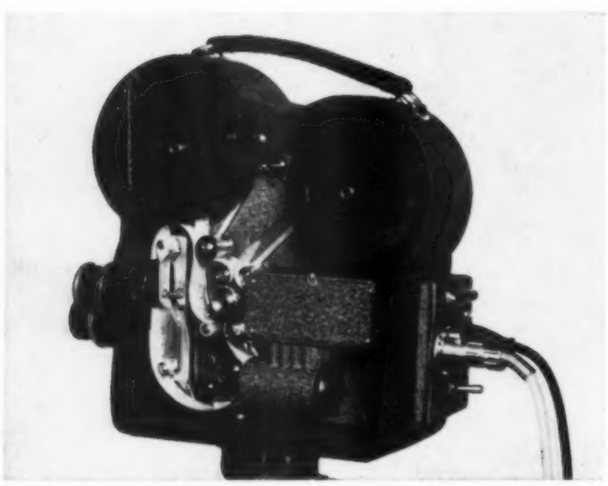
This small, moderate-priced 16mm single-system sound camera has become an important tool for professional cinematographers.



HEAVY-DUTY 3-LENS turret that takes all "C" mount lenses is one of many professional features of the Auricon Cine-Voice II. Film capacity is 100-ft., takes regular daylight film loads.

FOR MORE THAN A DECADE, the name Auricon has been synonomous with 16mm single-system cameras. Berndt-Bach, Inc., makers of the Auricons, stands virtually alone in its respective field. For there are no other 16mm sound cameras on the market, here or abroad, that compare with the Auricon in its ability to deliver consistently good results in the production of single-system sound films. Actually, there are no other 16mm single-system sound cameras presently being manufactured in the U.S.

The Auricon line of cameras consists of the Cine-Voice, the Pro-600 and the Super-1200. In discussing these three basic cameras recently, Walter Bach, President of Berndt-Bach, Inc., said that the Cine-Voice is the "Chevrolet" of the line; the Pro-600, the "Oldsmobile"; and the Super-1200, the "Cadillac." Just as the number of Chevrolet cars on the highways exceeds the number of Olds-



CAMERA OPENED to show interior. Camera mechanism is mounted on Neoprene-rubber cushions for quiet running. Optical sound recording unit is right of film transport in photo.

THE COMPLETE Cine-Voice II camera and sound equipment is shown in use at right. Amplifier - mixer - battery unit rests in carrying case section beneath tripod. Cameraman monitors the sound recording by earphones.

mobiles and Cadillacs, so, too, the Cine-Voice exceeds its stablemates in number.

The 100-foot film capacity Cine-Voice was first introduced in 1949. The advent of commercial television programming changed the destiny of the Cine-Voice, for newscasts became a highly important part of daily video programming, and a vast new market for newsreel footage *on 16mm film* was opened up. TV news cameramen found the Auricon Cine-Voice, with its portability, reliability, and high-fidelity sound recording, ideally suited to their needs. Thus, the small, moderate-priced single-system sound camera suddenly became an important tool in the professional field of cinematography. The little 12-pound camera is today the workhorse of almost all TV newsreel men, and has been subjected to more modifications than records can recall—many of them described from time to time in these pages. Since its initial debut, the Cine-Voice sound camera has been extensively redesigned by the manufacturer, is now known as the Cine-Voice II, and features an optical three-lens turret plus many other improvements. It may be purchased as a silent camera with a single-lens mount instead of turret, but minus the sound equipment, for around $480.00. Equipped completely for sound, it may be had in combinations of equipment and accessories at prices ranging up to a little over $1,000.00.

The sturdy, machined aluminum case of the camera is well designed for both appearance and balance. The new, heavy-duty 3-lens rotary turret takes all standard 16mm "C" mount lenses of any focal length, also Cine Kodak bayonet-mount lenses when equipped with "C" mount adapters.

The finder, located on left side of camera, shows a large view of the scene and has adjustment for parallax. Its basic field of view matches that of the 13mm wide-angle lens. Professional-type transparent amber-color mattes are provided that drop into a slot to alter the finder field of view to match other lenses ranging from 17mm and 25mm, to the 2- and 3-inch telephotos.

The camera mechanism is mounted on Neoprene-rubber cushions for quiet running and to prevent any camera noise being picked up by the recording microphone. Actually, the camera runs so quietly that a red warning light is a fixed accessory at the rear to indicate when camera is running.

The rotary shutter has a fixed opening of 175°, which provides an exposure of 1/50th of a second per frame at the standard sound speed of 24 fps (36 feet per minute).

The film gate is directly behind the picture-taking lens and consists of the aperture plate and pressure plate. In the gate the film moves over a series of stainless-steel balls—a patented feature designed to eliminate film-emulsion pickup and to insure sharp, in-focus pictures. The film pull-down is self-engaging and made of case-hardened and tempered steel, precision ground to size—all of which makes for rock-steady pictures and quiet film flow.

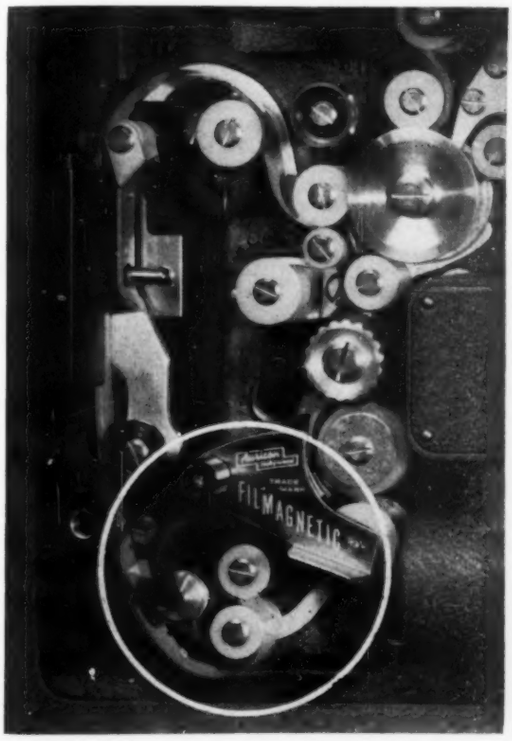
A balanced flywheel is an integral part of the Cine-Voice camera mechanism. Its purpose is to provide smooth, steady film motion so essential to recording a sound track on the film completely free of the variations in sound commonly known as "wows" or "flutter." Thus, the camera cannot be stopped instantaneously on a single frame of film, as with amateur cine cameras that are

COMPACT, PORTABLE, easy to handle, the Cine-Voice II outfit complete with amplifier-mixer, batteries, and microphone, may be had with a single carrying case, as shown above, or with the equipment distributed in two smaller cases.

spring-driven and have no flywheel. When the Cine-Voice camera is switched off, a few frames of film will continue past the film gate before the drive mechanism slows to a complete stop. This is of no particular disadvantage, as it is usually necessary in editing to cut out a small section of the film between scenes to achieve the desired continuity, pace and timing. A footage indicator on the back of the camera shows the amount of unexposed film on the spool.

Standard equipment is a constant-speed 115-volt A.C.

Continued on Page 566



THE CINE-VOICE II may also be equipped for magnetic sound recording. The Auricon "Filmagnetic" recording unit (in circle)—an optional feature—may be installed at factory at time camera is purchased, or at any time in future.

HOMEMADE FILM BIN

Eases task of editing 16mm film.

By GEORGE J. YARBROUGH

United Film Productions, Orlando, Fla.

ANYONE FAMILIAR with the problems of editing 16mm film knows it is difficult to splice and its images almost impossible to see without the aid of a magnifying viewer. It is convenient and easier on the eyes to look at a batch of strips hung right side up against a light that clarifies the image.

With the latter thought in mind, we recently constructed a film bin having the added convenience of easing the task of identifying the images. The completed unit is pictured in Fig. 1, at right.

Much of the conventional film editing equipment found today utilizes small pins on which to hang strips of film by the sprocket holes. While adequate, this method often results in damaging sprocket holes and tearing film.

Our bin utilizes ordinary spring clothespins, slightly modified, for holding each filmstrip upright for easy viewing, while below is a muslin-lined receptacle that protects the remainder of the strip, no matter what length it may be.

The manner of preparing and mounting the clothespins is shown in Fig. 2 First, 2 divisions were marked off 1-inch apart on the bin header—a piece of lumber 1″x2″. Each clothespin was disassembled before mounting on the board. To permit mounting pins without splitting the wood, two small holes were drilled in one member of the pin. It was then mounted in place on the header with two carpet tacks. A large drift punch was used to drive the tacks to prevent splitting the clothespin.

After all initial clothespin halves were thus mounted, each spring was then bent slightly to reduce the pressure between jaws of the clothespins.

Before the clothespins were re-assembled, surfaces of the clip area were sanded down with a fine grade of sandpaper so they would not scratch film surfaces. We found that the gripping pressure of the pins was so slight that Ektachrome original film could forcibly be pulled out of the clothespins without damaging the emulsion.

Continued on Page 563

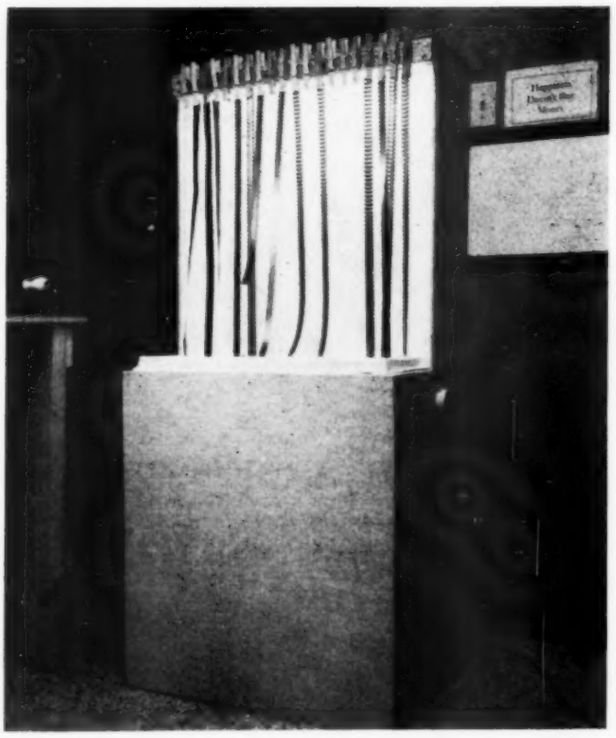


FIG. 1—Author's homemade film bin with back-light for easing the task of identifying film strips. Modified clothespins are used instead of pins to hold film strips which extend downward into muslin-lined bin.

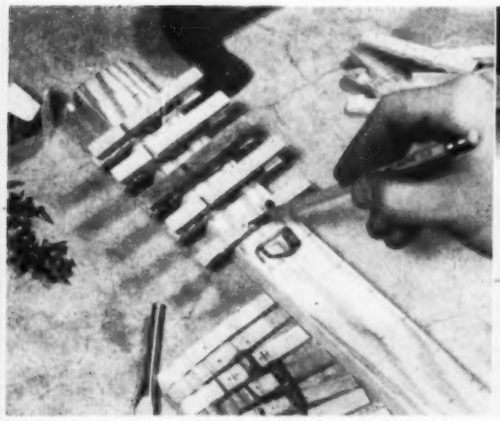


FIG. 2 — Method of preparing and mounting clothespins: holes are drilled in one member and tacks used for mounting.

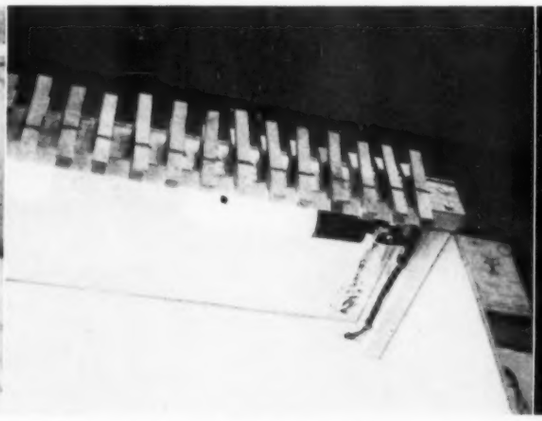


FIG. 3—Tubular light bulbs mounted in back of header of film rack furnish light for shadowbox that eases task of identifying filmstrips.

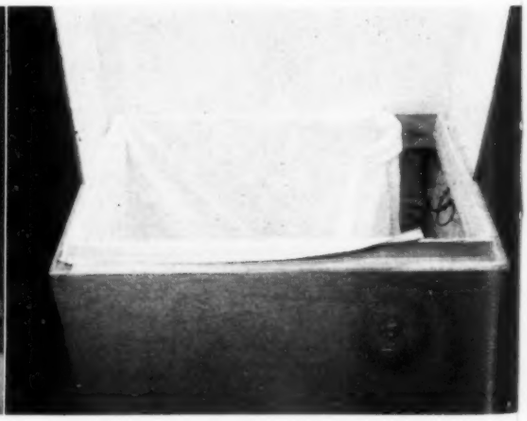


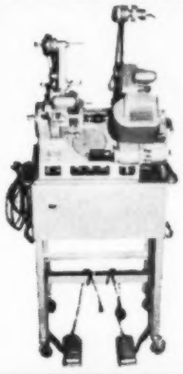
FIG. 4—Liner was made of old bedsheet, formed like an open-end box, and inserted in the bin to give protection to films.

PUZZLED ABOUT EDITING MULTIPLE SOUND TRACKS?

IF SO THEN TRY THE **NEW**

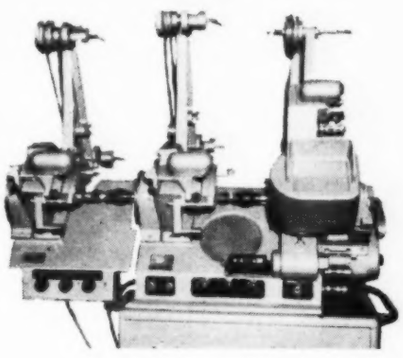
CAMART ADD-A-UNIT EXTENSION PLATE

From this



For Series 20 Moviola — U. S. Pat. Pending

to this

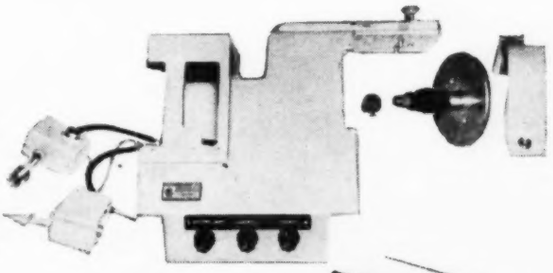


Here's How It Works!

Today when you have a completed feature or short a Musical score is recorded to suit. Each recording for effects background is done on separate tracks. Here is where the Camart Add-A-Unit can save you time and money. With the Add-A-Unit you can edit and cut three or more tracks simultaneously. No need to go back again and run the whole picture through. Everything is done in one operation.

HERE'S WHAT YOU GET:

1. The Add-A-Unit extension plate ribbed construction of durable aluminum alloy, precision machined to fit any series 20 Moviola film editing machine in perfect alignment.
2. Extra belt guards and screws.
3. Complete flexible coupling assembly to interlock sound heads.
4. Extra flange.
5. Amplifier connections with all ready made fittings for easy installation.
6. Separate volume controls permit individual control over each sound head, including the composite.



Camart Add-A-Unit Extension Plate **$325.00** **COMPLETE**

Additional Separate Sound heads with take-ups—Prices on Request.

the CAMERA MART inc.

1845 BROADWAY (at 60th St.) NEW YORK 23 · PLaza 7-6977 · Cable: Cameramart

at Columbus Circle next to New York's new Coliseum

Electrical Tripping Mechanism For Sound Mixing

Simplifies use of tape recorders for budget sync-sound productions.

By RONALD W. MOORE

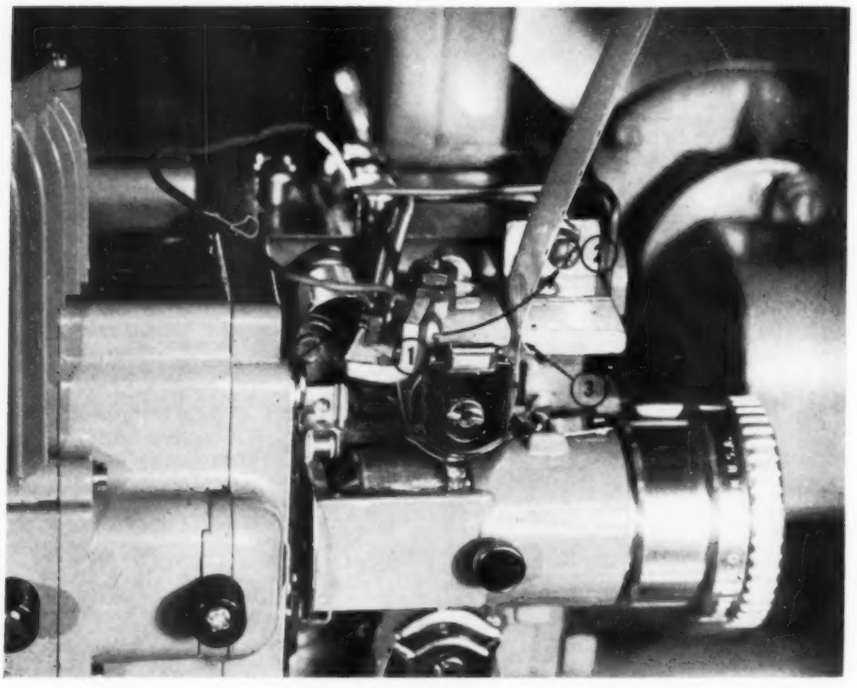


FIG. 1—TRIPPING MECHANISM that actuates sound recorders consists of plastic base with slot to admit passage of film, also holds two electrical contacts (1) and (2). Here contact (1) is swung wide open to show details of device. Normally, it rests close to contact (2), and makes momemtary contact when notched area of film passes point indicated at (3).

ONE OF THE PROBLEMS facing small film production units is the high cost involved in obtaining the necessary sound equipment to enable handling their own sound mixing needs. Standard quarter-inch tape recorders offer acceptable quality for various sounds and sound effects but they usually cannot be depended upon to maintain synchronization for any extended period of time. However, where the standard quarter-inch machine can be accurately started at a critical time, it may be used for many recordings of short duration.

This is the theory the author maintained in pursuing an economical method of handling sound mixing problems for Michigan State University's Motion Picture Production Unit where he was employed. All the film production equipment at the University is 16mm. One Bell & Howell projector with a synchronous motor, a Kinevox synchronous magnetic recorder, and a Wollensak quarter-inch tape recorder were used in developing the device which the author calls an electrical tripping mechanism for sound mixing.

The principle of the device is simple: a notch cut in the edge of the work print of the picture for which a sound track is being recorded causes an electrical impulse to automatically actuate the tape recorder. There are three component parts in the device: (1) An attachment on the projector which will recognize a notch in the work print and instantly set up an electrical impulse (Figs. 1 and 2); (2) An electrical system consisting primarily of a transformer and a relay, and (3) a solenoid mounted on the tape recorder to instantly actuate the machine upon receiving the electrical impulse.

The device on the projector consists of a plastic plate mounted just above

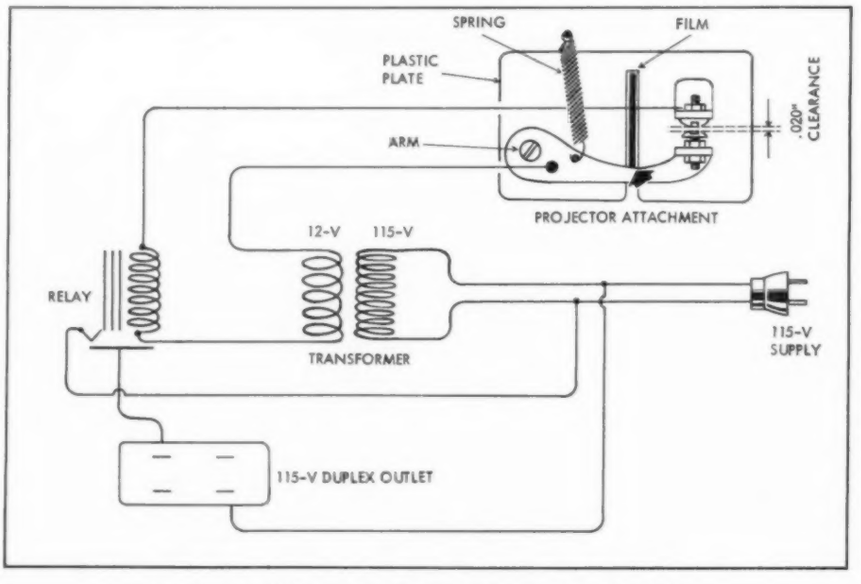


FIG. 2—SCHEMATIC of electrical system for sound cueing device.

the top feed sprocket having a slot that allows the film to move through the projector in the normal manner (Fig. 1). A metal arm mounted on the plastic plate is hinged and slightly spring loaded so it will ride gently against the edge of the film as it is being projected (1 in Fig. 1). On the end of the arm opposite the hinge a small brass bolt serves as an electrical contact point. There is another contact point mounted on the plastic plate in such a manner as to clear the point on the arm by about .020 of an inch as long as the film is threaded in the projector or traveling through it. When a notch is cut in the edge of the work print, between the sprocket holes, the open or notched area causes the points to make contact.

The various parts of the electrical system are mounted on a panel on the left side of the projector. Mounted on the panel is a relay with the coil wound for 12 volts, also the contact points for 110 volts. Power is supplied by a standard 2-14 lamp cord connected to the transformer and to a standard duplex outlet connected in series with the points on the relay. The 12-volt circuit of the transformer is connected in series with the contact points mounted on the projector and the coil of the relay.

The attachment on the quarter-inch tape recorder is essentially a plate mounted on the case of the machine near the pause button and having a movable arm attached in such a manner as to secure the button in the pause position (See Fig. 3). A 110-volt solenoid (6) is mounted on the plate and mechanically connected to the arm (5) in a manner which will release the pause button (4) each time the solenoid is actuated by an electrical impulse. The solenoid is supplied with a 2-14 lamp cord and standard male plug.

Now it may be seen that if 110-volt power is supplied to the device, the solenoid connected to the outlet on the panel of the projector, the recorder locked on "pause" by its attachment pre-set in the play position, and if the projector is set into operation, then a notch in the edge of the work print will instantly actuate the recorder.

In order to synchronize the sound effects with the picture, some reference points must be selected. The arm of the device mounted on the projector rests against the film exactly 18 frames ahead of the aperture gate of the projector. With the film traveling at 24 frames per second the electrical impulse will be set up just ¾ths of a second prior to the time the frame beside the notch will be projected.

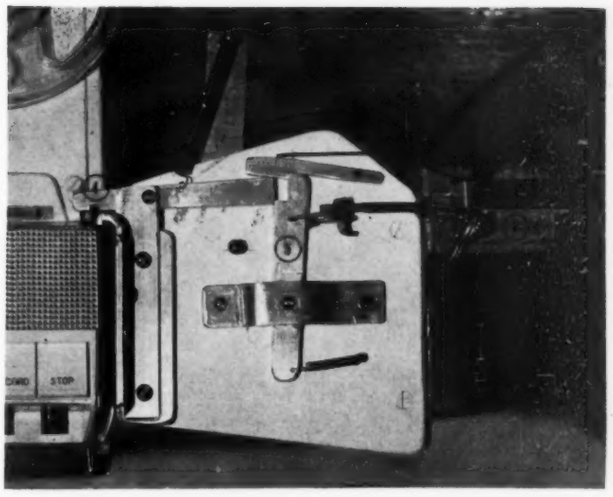


FIG. 3 — MECHANICAL LINKAGE that holds pause button on recorder until the solenoid (6) pulls the catch (5) and allows the normal spring pressure of button (4) to engage transport mechanism of the recorder.

The procedure is to notch the exact frame in the picture where the desired sound is to occur or begin. Subsequently the tape must be cued ¾ths of a second in advance of the first sound. With tape traveling 7½ inches per second then it could be pulled backed 5.625 inches at a rest point ¾ths of a second prior to the first sound.

Considerable testing was conducted in order to validate the accuracy in cueing and it was found that the 5.625" pull-back was accurate enough to remain within the 24th of a second tolerance of the film. This procedure was found to be satisfactory because it is very convenient to notch the film at the exact frame where the sound is required. The ¾ths of a second time interval allows for stabilization of recorder speed and reaction time for the sound mixer to open the channel during the mixing process.

In initial tests of the device, 16mm pictures of a baseball game were used and sounds of the ball hitting the bat, crowd noises, etc., were supplied by two ¼-inch tape machines.

More than one recorder may be actuated by the tripping mechanism simply by placing switches in the 110-volt line between the projector and the solenoids on the tape machines. (A solenoid and release device is necessary for each tape machine used.) Then by opening the proper switch at the correct time any machine or combination of machines may be started at selected times.

Continued on Page 564

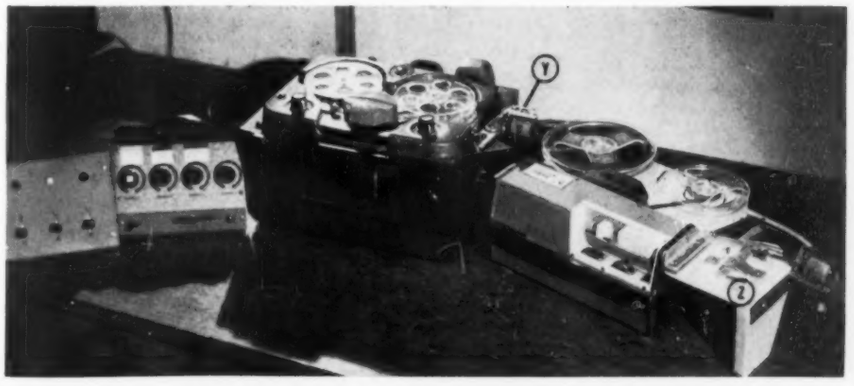


FIG. 4—TYPICAL LINE-UP of equipment for mixing sound recorded on quarter-inch tape, using the electrical tripping mechanism illustrated and described by author. From left are: switch for directing electrical impulses to each recorder; low-cost sound mixing panel; and two standard tape recorders. Device described in Fig. 3 above is shown at (Z), while another solenoid control is attached to first recorder at (Y).

BROOKS CAMERAS

The West's Largest Selection of Fine Professional Cameras

BOLEX H-16 REX

Variable shutter permits smooth fades and lap dissolves. Greater exposure control possible through partial closing of the variable shutter instead of lens. Shown with REXOFADER—an optional accessory ($37.50) that permits automatic operation of the variable shutter.

H-16 REX from $400, with Lytar 1" f/1.8 lens.

BOLEX 16mm LENSES

Pan Cinor 85—w/R.F. From 17.5 to 85mm—F2 ..... **$420.00**

Pan Cinor f/2.4 lens, focal lengths from 17½mm to 70mm..... **$269.50**

Pan Cinor 100 f/3.4 lens, focal lengths from 25mm to 100mm **$329.50**

Switar 10mm w/a f/1.6 FM 8" to inf. "C" mount. Visifocus **$149.50**

Switar 16mm w/a f/1.8 FM 8" to inf. "C" mount. Visifocus.... **$99.50**

Switar 25mm 1" f/1.5 FM 1½' to inf. Visifocus..... **$115.00**

Yvar 100mm 4" f/3.3 tele. 4-power magnification. Focuses 8' to inf. **$89.50**

Yvar 16mm w/a f/2.8. Focuses 1' to inf. "C" mount. Visifocus **$59.50**

Pizar 26mm 1" f/1.9. Focuses 1½' to inf. "C" mount. Visifocus **$67.50**

Yvar 75mm 3" f/2.8 tele. Focuses 5' to inf. "C" mount. Visifocus **$69.50**

Switar 25mm 1" f/1.4. Focuses 1½' to inf. "C" mount..... **$168.00**

Switar f/1.4 50mm 2" tele. lens. Ultra-high speed. Focuses 3' to inf. **$169.50**

Yvar 150mm 6" f/4 tele. lens. 7½" length. FM 13' to inf. with case. **$145.75**

NEW ARRIFLEX 16

The only 16mm camera providing through-the-lens focusing and viewing during exposure, electric motor drive. Matte box cables..... **$1725.00**

16mm Xenon f/1.9 lens..... **$170.00**

25mm Xenon f/1.5 lens..... **$170.00**

75mm Xenon f/2 lens..... **$200.00**

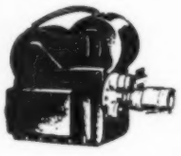
Pan Cinor 70—Zooms from 17.5mm to 70mm..... **$260.00**

Zoomar lens 1" to 3" f/2.8 for Arriflex..... **$579.00**

Arriflex, Model 16 Tripod..... **$175.00**

Same as above plus built-in buckle switch and motor cable lock **$1795.00**

AURICON CINE-VOICE II



16mm sound-on-film movie camera with professional heavy-duty 3-lens turret. Operates from house current or car battery. Available in a choice of models to suit a variety of filming requirements **$795.00**

CINE VOICE I—Used..... **$495.00**

AURICON PRO-600 — 16mm optical-sound-on-film; self-blimped; sync motor drive for single or double-system recording; Electronic take-up, film-flow without friction clutches or belts. Various combinations of accessories available **$1456.25**

AURICON "SUPER-1200" — 16mm sonud-on-film camera (self-blimped) with 3-lens turret for "C" mount lenses. 1200 ft. capacity for 33 minutes recording time..... **$4149.00**

SUPER 1200—AURICON-TILT professional tripod, wgt. 27 lbs..... **$406.25**

AURICON PRO-200. Was $1,495.00. Used **$995.00**

Use Your Bankamericard

West's Largest Selection • Budget Terms Available • Write In For A Complete List Of Professional Equipment

BROOKS CAMERAS

45 KEARNY AT MAIDEN LANE • EXBROOK 2-7348 • SAN FRANCISCO 8, CALIFORNIA

ALL WEATHER CAMERAMAN

Vincent Hunter turns inclement weather to his advantage when photographing travel films for Union Pacific Railroad.

By CLIFFORD V. HARRINGTON

SHOTS OF WILDLIFE and unusual scenic vistas are imaginatively photographed by Vincent H. Hunter for the many promotional films he produces for Union Pacific Railroad. Hunter is Manager of the company's Motion Picture Bureau. He's shown above using an Arriflex 16, operated by lightweight battery pack carried on shoulder sling.

TWO PHOTOGRAPHERS with motion picture cameras were working almost side by side near the rim of the Grand Canyon. Suddenly a storm clouded the sky and a brisk rain came pelting down. One of the men quickly gathered up his equipment and hurried for shelter. The other, Vincent Hunter, remained and continued shooting. The unusual, off-beat motion pictures Hunter so often gets this way have earned for him a nation-wide reputation as one of America's leading scenic motion picture photographers.

When other cameramen are indoors cursing cloudy or rainy weather, Vincent Hunter, who is both manager of and cinematographer for The Motion Picture Bureau of the Union Pacific Railroad, invariably is out with his 16mm Arriflex or Cine Special cameras filming nature in some unusual dramatic mood. Thirty-five years of movie making has taught him, among other things, that there is no such thing as an "ideal" condition for shooting motion pictures in color. Hunter believes that any good cinematographer can make effective movies in any kind of weather, as long as there is enough light to produce an acceptable exposure with the film and camera being used.

FROM THE DESERT TO ALASKA, Vincent Hunter and his 16mm cameras have photographed most of America's scenic wonders—many of them under unusual weather conditions that lent new interest and pictorial beauty to otherwise ordinary vistas.

At the Grand Canyon location mentioned above, Hunter erected a protective canopy over his Arriflex 16 camera and tripod, attached a remote-controlled stop-motion device to the camera starting button, then retired to the shelter of a tree while the camera recorded in interval exposures the building of the storm over the far canyon rim. The resulting footage of dark, menacing clouds followed by a driving rain form a dramatic climax for "Painted Canyons," one of his recent 16mm color productions.

While Hunter has several fine cameras to implement his work, he points out that expensive equipment is not necessary for recording the type of shots that add punch to the "formula" travel film. "Any camera," he says, "having a single-frame release and a range of motor speeds can produce many interesting pictorial effects.

"It is much more important that the photographer have a creative imagination plus a persistent tendency to make effective use of his camera," he added.

Hunter possesses both of these qualities. For one of his recent pictures he wanted a shot of clouds rolling away rapidly from the camera toward a range of mountains in the distance. The scene, out of the ordinary in concept, was to be photographed in stop-motion to step up the cloud action on the screen.

He made several trips to a chosen locale before he found the desired weather conditions and cloud formation. He then visualized the speed he wanted the cloud action to take on the screen and set his camera stop-motion device accordingly. The result was an awe-in-

Continued on Page 562

EXPOSURE ACCURACY WITH MAGIC-EYE CAMERAS

A progress report on new developments in automatic exposure control for cine cameras.

By DON NORWOOD

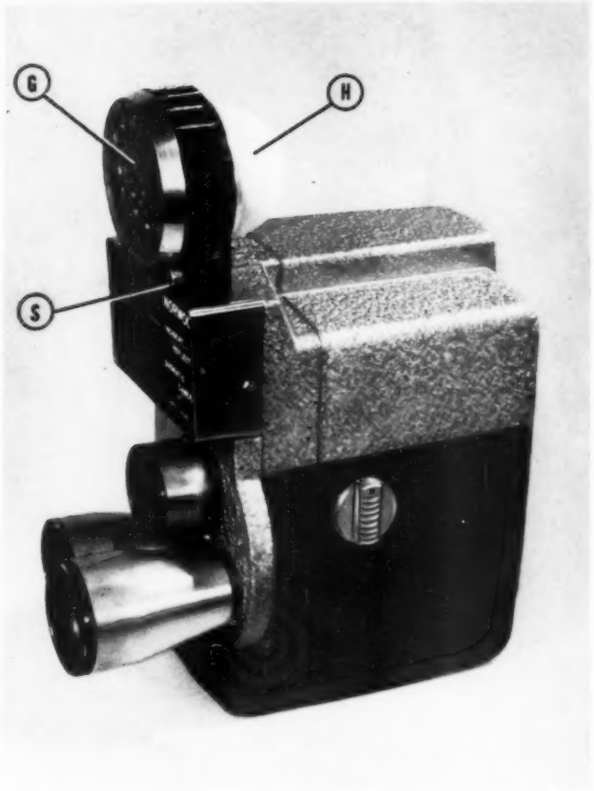


FIG. 1—Prototype of Norwood Incident/Reflected Duomatic 8mm cine camera features dual automatic electric-eye exposure control that evaluates either incident or reflected light. (G) is grid for reflected light evaluator; (H) is hemisphere light collector of incident light evaluator; (S) is selector button for shifting from one evaluator to the other.

AUTOMATIC, ELECTRIC-EYE exposure control—the big innovation now being featured in many late model cine cameras—not only is winning acceptance among amateur movie makers, but also is being adapted to some professional cameras used in certain specialized fields such as photoinstrumentation.

FIG. 2—Typical example of underexposure where subject is photographed against bright background, with exposure based on reflected light reading. Here overwhelming bright area unduly influenced the meter, causing foreground subject to be underexposed.

The practicality of employing automatic exposure control generally in professional cinematography rests on the outcome of continuing experiments.

The electric-eye used in many of the newer cine cameras is a light-sensitive photoelectric cell which controls the iris of the camera lens according to the prevailing light or scene brightness. Primary aim in automatic exposure control is to enable the camera user obtain a higher percentage of good exposures with a minimum of care on his part. From a merchandising point of view the idea has exceptional appeal. But because most cameras presently featuring built-in electric-eye exposure control adjust the lens stop according to the volume of light *reflected* by the scene, the innovation poses some limitations readily evident to the professional cinematographer.

One of the characteristic faults found in many amateur films exposed on the basis of reflected light measurement is that scenes having persons or objects photographed against a bright background invariably show the foreground subjects underexposed as in Fig. 2. This is because any overly-bright object or area in a scene unduly influences reflected-light type meters, causing an overreading that results in underexposure of the principal subjects in the scene. The same is true where there is some backlighting in the scene. This is graphically illustrated in Figs. 3(a) and 3(b). If some of the backlight which prevails in scene 3(a) strikes the photo-cell of the camera's light-measuring device, this bright light will cause the electric-eye to close down the lens iris below the point that will render good exposure *on the subject*, resulting in underexposure shown in Fig. 1(b).

In scenes where the background is substantially darker than the foreground subject, as in Fig. 4(a), the effect is just the reverse: the excessive dark area (background) unduly influences the electric-eye of the reflected-light measuring device so that it "opens up" more than necessary. This leads to opening the lens wider than necessary which results in slight overexposure of foreground subject as illustrated in Fig. 4(b).

Some electric-eye cameras tend to produce inferior exposed pictures where the overall light reflectance in the scene departs substantially from the standard of 18% reflectance (medium tone). It has been noted that all cameras of this type presently being marketed feature electric-eye exposure control devices of a type similar to that used in reflected light exposure meters.

It has long been fairly well known that best photographic results are obtained with reflected light exposure meters when they are used to determine exposure on the basis of multiple readings of a scene, i.e.: completely measuring the light reflectance of the scene in a series of closeup readings on shadows, highlights, medium tones, etc., then averaging the readings to arrive at the exposure norm. As a rule, "one-shot" reflected light readings taken from camera position do not always produce the most desirable exposures, and it is this fact that must be considered when shooting movies with many cine cameras having this type exposure control. An interesting reference on these matters is to be found in a technical paper by Allen L. Sorem, of Eastman Kodak Company, Rochester, N.Y., entitled: "An Evaluation of Certain Techniques of Using Exposure Meters," which was published in the *Journal of the SMPTE* for October, 1956.

The convenience factor of the new electric-eye cameras is so great, however, that most users of these cameras —shooting for the most part front-lighted scenes having average reflectance—obtain acceptable exposures. It is when they attempt to shoot subjects against extremely dark or extremely light backgrounds, against the sun, or where strong backlighting prevails, that they produce disappointing exposures, and without really knowing why.

Can more versatile and accurate electric-eye cameras be produced? Before answering this question, let us review briefly some of the interesting points in the history of photoelectric exposure meters. The first such meters were produced during the early 30s. They were of the reflected-light type, that is, they measured the light reflected from the scene to be photographed. Although these meters readily became popular, some discriminating photographers found loopholes in their performance—principally the same as those described above for electric-eye cameras.

FIG. 3(a)—Backlighted scene photographed with correct exposure.

FIG. 3(b)—Same scene as it appears to reflected-light type exposure evaluator.

The writer was one of those who believed at the time that more accuracy was possible in metering light for photography, and began research on the problem which culminated in the invention and design of the Norwood incident-light exposure meter whose salient feature was a patented three-dimensional light collector (a translucent hemisphere) as an adjunct to the photo-electric cell. This 3-D light collector represented the camera side of a three-dimensional photo subject. It made the meter responsive to all incident light reaching it from all angles—the same as that falling on the subject. Use of this incident-light meter produced many advantages in photographic accuracy and versatility, and it was widely accepted by both amateur and professional photographers.

Continued on Page 564

FIG. 4(a)—Scene with dark background correctly exposed.

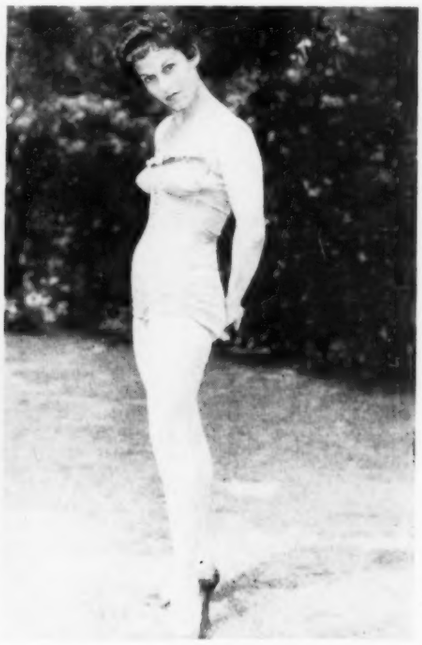


FIG. 4(b)—Same scene photographed on basis of "one-shot" reflected-light metering.

STABILIZER FOR HAND-HELD CAMERAS

Gyro attachment steadies camera when shooting without a tripod or from aircraft or moving vehicles.

By JOSEPH V. MASCELLI

ARROW POINTS to gyro stabilizer attached to base of 35mm Eyemo camera. Gyroscopic device steadies camera for hand-held shooting.

THE KENYON GYRO Hand Stabilizer is a completely new approach toward minimizing the angular movement or wiggle in hand-held camera shots. It aids in eliminating the vibration resulting from involuntary movement of the cameraman's hands and arms or the sway of air, sea or land vehicles. The stabilizer controls such undesirable motion by providing a firm, though invisible, resistance through a unique application of gyroscopic principles.

The unit is a precision instrument measuring approximately three by five inches, about the size of an elongated baseball. It weighs only one and three-quarter pounds and will fully stabilize hand-held instruments such as cameras and binoculars up to nine pounds in weight. It consists of two gyros turning on different axis. The gyro motors develop between 20,000 and 23,000 RPM, thus providing a steady support because of the tendency of a gyro to remain on a given axis. In operation the stabilizer acts like a geared tripod head, allowing the cameraman to pan in any direction with amazing ease, even when shooting from a vibrating helicopter or bouncing car. The cameraman can "over-power" the gyro, when desired, by "breaking" its axial hold and re-establishing the camera in a fresh position, where the gyro once again takes over.

This clever gyroscopic instrument was invented by Ted Kenyon, of Old Lyme, Connecticut, whose background includes work on automatic pilot mechanisms, including a blind flying gyro device for helicopters. The original need for the instrument arose when Kenyon had difficulty holding a pair of binoculars steady while sighting navigational markers in overcast weather. The many photographic possibilities for utilizing the unit for hand-holding movie cameras and still cameras equipped with long telephoto lenses, naturally suggested themselves once the stabilizer was perfected.

An interesting test, recently conducted by the U. S. Air Force at Edwards Air Force Base, dramatically proved the effectiveness of the gyro stabilizer. It was attached to a Bell & Howell 16mm Filmo camera equipped with 3-inch telephoto lens, 400-ft. magazine, and electric motor. Aerial scenes were filmed during a flight in "rough" air with the camera hand-held. Shots were also made for comparison without the gyro stabilizer. The latter shots were considered useless because the combination of telephoto lens, rough air and inherent vibration of the helicopter set up extreme vibration in the camera.

The comparison scenes, made under identical conditions using the gyro attachment, were amazingly smooth, with just a hint here and there of roughness when a very bad bounce caused the gyro to "break away" and then regain its stability.

Use of this gyro stabilizer is not limited to movie cameras, however, since its steadying action is just as useful with binoculars, still cameras, sextants or any other hand-held optical instrument. Its unique gyroscopic action is particularly helpful when shooting from moving vehicles such as speeding autos, boats and airplanes. Police and rescue workers have found the unit extremely useful when using binoculars from helicopters. A recent police test showed that auto license plates could be easily read with 6 x 50 binoculars from a helicopter hovering overhead.

While the optimum object weight that can effectively be used with this device is approximately nine pounds—which covers most 16mm cameras—tests have shown that great improvement in steadiness is effected, although sta-

Continued on Page 566

IMMEDIATE SERVICE!

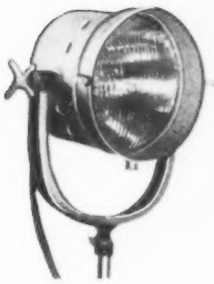
Save Time! Save Money!

Rent ALL Your Production Equipment From BEHREND'S... Chicago's Largest

- CAMERAS
- LIGHTING EQUIPMENT
- SOUND EQUIPMENT
- PROJECTORS
- EDITING EQUIPMENT
- ANIMATION EQUIPMENT

Rent WITH OPTION TO BUY!

WRITE FOR CATALOG



Special! WHILE THEY LAST!

ColorTran MASTERLITE

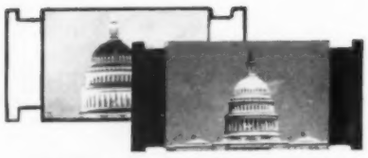
BRAND NEW!
"HOTTEST" LIGHT
IN THE BUSINESS!
List Price **$36.75**

NOW ONLY **$24.75**

BEHREND CINE CORP.

FORMERLY TELEVISION EQUIPMENT COMPANY

161 E. GRAND AVE. • CHICAGO 11, ILL. • MIchigan 2-2281



REVERSAL PROCESSING

PROMPT
DEPENDABLE
QUALITY

Specialists in high speed or standard reversal processing . . . Films returned same day received . . . Reversal duplicates on daily schedule . . . Fast Kodachrome processing by Eastman Kodak through our direct dealership . . . Kodachrome printing 8MM & 16 MM . . . 8MM enlarged to 16MM . . . 16MM reduced to 8MM . . . Security clearance . . . Highest quality in the industry . . . Most rigid exacting standards . . . Vacuumating . . . Accurate and trouble-free mailing service . . . Complete stock of Eastman and duPont reversal films

SERVING INDUSTRY OVER 21 YEARS

For full information, write Dept. X

NATIONAL CINE LABORATORIES
BOX 4425
WASHINGTON 17, D. C.

MILLER
FLUID ACTION
TRIPOD HEADS
"D" MODEL
and
PRO MODEL

THE NEW
MILLER
GROOVED LEG TRIPOD
WITH BALL LEVELING TOP

Dealer Inquiries Invited

MILLER PROFESSIONAL EQUIPMENT

V. PINCETICH, AUTHORIZED DISTRIBUTOR
285 MELBOURNE AVENUE
ASTORIA, OREGON

PHOTOGRAPHING "GUN HILL"

Continued From Page 545

terior sequences of the picture, as well. Here, again, there was a challenge, because western interiors are usually small and uninteresting. Moreover, they often feature wild wallpaper and similar decor of the period that is unattractive and distracting to the eye. Through the use of dramatic lighting and camera angles he managed to make these drab interiors take on greater visual interest.

An outstanding example is the sequence in which Douglas has taken Holliman prisoner and has him handcuffed to the bed in a hotel room while they wait for a train out of town. The sequence begins in the afternoon and the windows are brightly lighted from outside to suggest intense sunlight. Then dusk falls and a ruddy glow suffuses the room as the sun sinks toward the horizon. Outside, the henchmen silently wait, surrounding the hotel and determined not to let Douglas pass out alive with his prisoner. There is a quiet hush over all, expectant and ominous. Suddenly it is night. The interior of the room fades into darkness —yet, overall there is a cold unearthly glow, a kind of eerie moonlight that turns the faces of the men chalk white, portending tragedy and death. Lang achieved this effect through the use of "cold" light sources with only the faintest blue gelatin over the units. In front of the camera lens he used a light fog filter to add a frosty touch. Then he had the lab print the sequence neutral, as nearly devoid of color as possible. The effect on the screen is chilling—perfectly in key with the suspense generated by the action.

This mood persists as Douglas walks his prisoner out of the hotel at the point of a shotgun, and standing with him thus in a buggy, slowly drives to the station to meet the approaching train. All along the route hostile gunmen stand, not daring to shoot for fear of causing the prisoner's death. Their faces are made menacing by cross-light, deep shadows and low-angle compositions against a black sky.

This night sequence owes much of its force to the fact that it was actually shot at night instead of in the daytime with blue filters and underexposure to simulate night. Lang is fundamentally opposed to the commonly used day-for-night technique. "These days they urge you to shoot night scenes in daylight for the sake of economy," he points out, "but for every scene shot this way that looks good I'll show you twenty that look just like underexposed scenes printed blue — the effect just doesn't come off."

Lang did not have to settle for second best in night scenes for this picture. Even though it took almost every lamp the studio owned to light the town of Gun Hill, producer Wallis readily okayed the expenditure and the resultant climactic night sequence packs a tremendous dramatic wallop.

Throughout the film Lang used backlight wherever possible. Even in exterior long shots he placed dark figures almost in silhouette against light backgrounds to make them register more dramatically than they would have in front or three-quarter light. This helped avoid the picture-postcard look so common in outdoor epics and kept the faces looking more natural.

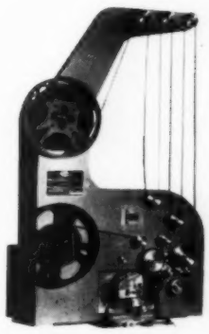
In his interiors he also used backlight and cross-light whenever possible to accentuate dramatic effect. A long hotel corridor which figured in some of the important plot action had to be lighted adequately to show the action, but subdued enough to remain true to the style of low-key lighting he had set for the sequence. Also, it was necessary to play down top lighting on this narrow set so that the light source would not appear to be coming from the ceiling.

Since the film was a period piece, set in a "gaslight" era, the problem of conveying the effect of actual flame in the lighting fixtures was a constant one. Gas flame does not have sufficient intensity to be photographically convincing as a light source, so it was necessary to accentuate the effect by means of pools of incandescent light supposedly emanating from the fixtures. Then, too, the flame registered on the color emulsion as more white than it appeared to the eye. Lang controlled the effect by using small yellow bulbs in the fixtures behind glass just frosted enough to give the illusion of flame. He used light yellow gelatins over lamps nearest the fixtures to simulate an authentic source glow.

The final sequences in "Last Train From Gun Hill" are almost exclusively low-key, an effect which Lang gained by keeping his backgrounds dark while lighting the players starkly against them. At times he reversed the effect by silhouetting faces against lighter

EDGE NUMBER ANY MOTION PICTURE FILM WIDTH

- ENM-16 numbers 16MM film every 40 frames. An adjustment bar permits edge numbering the film in any area (16MM only).
- ENM-16-M numbers 16MM film every 16 frames to match 35MM. Numbering can be done in any position on the film.
- ENM-35 numbers 35MM film every 16 frames. A combination 17½-35MM machine is available at a slightly higher cost.
- ENM-70 numbers 70MM film every 16 frames. (Equipped with an 80 tooth sprocket with five perforations per frame.)



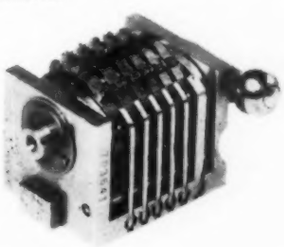
ENM-16
$2675.

ENM-16-M
$2995.

ENM-35
$2500.

ENM-70
$3250.

- Machine can edge number rolls up to 3000'.
- Friction devices control the payout reel. A torque motor allows the film to be taken up evenly and smoothly. An adjustment knob for the torque motor rheostat permits quick adjustment to take up 1000, 2000, and 3000 foot reels.
- The impression roller is free wheeling and self adjusts itself to give a most legible number without the danger of embossing.
- A simplified inking system with an eccentric center roller in the ink well provides quick alignment for the applicator sponge rubber roller. A doctor knife in the inkwell removes all surplus ink from the inking rollers.
- There is a simple adjustment for dispensing the amount of ink required. The unit has a small brush wheel to clean the numbering element after the number is applied.
- A micro switch cuts the power when a roll of film is completed.
- A Veeder Root counter checks the film footage.
- A keeper holds the film in place for sync mark and spot coding.
- The handle in front permits the operator to manually turn the numbering block to the desired position for a number change.
- Running speed is between 80 to 110 feet per minute.



NUMBERING BLOCK

- The numbering block generally consists of two letter wheels or one number and one letter wheel manually operated and four number wheels which move automatically and number from 0001 to 9999. All numbers can be reset by hand to begin at any desired number.
- ENB-35 ($400)... Numbering block for 35MM indirect reading. Two letter wheel and four numbers.
- ENB-16 ($400)... Numbering block for 16MM direct reading. One letter and four numbers wheel or two letters and four number wheel.

MAIN OFFICE: 956 SEWARD, HOLLYWOOD, CALIFORNIA, HO 2-3284

HF HOLLYWOOD FILM COMPANY • reels • cans • shipping cases

BRANCH: 524 WEST 43RD ST., NEW YORK, NEW YORK, LO 3-1546

areas. He readily admits the dilemma this type of lighting has caused for the cinematographer since the advent of the drive-in theater: "The usual warning is 'Don't make your lighting too sketchy or they won't be able to see anything in the drive-ins.' And yet, if you constantly have that thought in your mind, you are going to compromise every effect until there is no effect —just nothing at all. I feel that we still have to have dark areas to convey mystery and mood — and that we must shoot pictures primarily for the larger audiences that attend the hardtop theatres. I always try to keep the light on the players a bit brighter than the norm, however, so that the lab can print the film lighter for the drive-ins, if necessary."

"Last Train From Gun Hill," in the final analysis, is a study of conflict between men, and Lang never lost sight of the fact that the really important elements were people and not just vistas of impressive scenery. He was aided toward this realization by the Vista-Vision camera, in which the film moves through the camera horizontally to afford the advantage of a double-size frame which is then reduced down to standard aperture size in printing to provide release prints of exceptional sharpness and clarity of detail. The ultimate result is that the human figure remains visually important even though it may be a tiny speck far off on the horizon. There is no danger that it will be lost in a welter of grain and soft focus.

Because Lang fully realized the importance of the human element in this film, he paid great attention to making the leading players photographically important. They seem to tower over ordinary humans, striding to meet Destiny head-on. They are flesh-and-blood men, but almost allegorical in symbolizing the quiet, efficient virility of the Old West.

"Kirk Douglas is wonderfully interesting to photograph," Lang observes. "He has a good face, a strong face. If you get a good angle on him, particularly a low angle, he looks like he is capable of doing anything. And so does Anthony Quinn. They both come through physically strong and strong of purpose. Low angles, shooting up, helped to give them a gutsy look, an extra strength and a heroic quality."

The actors themselves heaped congratulations upon Lang for his work on "Last Train." Privately, he feels that because he made them look important, they felt important and were inspired to do a better job of acting. But the critics agree, and so will audiences everywhere, that this is a superior job of motion picture photography.

ALL WEATHER CAMERAMAN

Continued From Page 555

spiring view of fleecy white clouds racing across a windswept sky, heralding an impending storm.

Hunter likes to experiment with effect filters. He will often intensify the mood of a scene or sequence by emphasizing certain colors in nature or by subtly injecting color not present, using filters singly or in combination.

Hunter believes that the imaginative cinematographer deals primarily with emotion, which he expresses or stimulates pictorially on the screen. Thus, if the subject warrants, he may depart from conventional techniques. For example, he says, a sharp image is not necessarily the best for every scene; often it is a soft, fuzzy image the photographer needs to point up the mood of a scene.

"The movie maker," Hunter says, "draws his emotional experiences from the subject matter at hand, and he must use his creative powers to the fullest in order to bring his impressions to the screen with impact.

"Even though the amateur movie maker has only a few rudimentary pieces of equipment, he is as well prepared as any professional to make travel films that have interest and screen impact. For the success of his work depends not so much upon the scope of his camera—what it can or cannot do—as on what *he* can accomplish with his equipment."

Hunter's methods are simple. If he observes a particular situation in nature that intrigues him, he studies it carefully for its possible pictorial effect on the screen. Perhaps it is a majestic, white thunderhead boiling over a distant mountain range; a restless sea crashing on a shoreline; or a rivulet dripping water from granite rocks. After careful appraisal of the scene, during which time his imagination sparks the concept of the pictorial treatment he is about to give it, he will photograph the scene from the camera angle, at the time of day, and possibly through just the right filter that will give it maximum screen impact.

Sometimes his aim is to accentuate reality; at other times he may strive to subordinate reality and give play to fantasy. The subject may call for shooting in slow motion to prolong its action on the screen. From experience, Hunter knows what camera speeds to use to achieve any effect he wishes. More than once he has probed the mysteries of nature with his interval-timer-controlled camera to bring to the screen fascinating movies of plant growth or the evolution of a blossom from bud to flower. "As each subject of this sort invariably has a different growth period, it is necessary first to study the subject to determine the extent of this period so that the camera's interval-timer may be properly set to obtain a sequence of single-frame exposures of the desired duration. In most instances Hunter uses a Dunning intervalometer to operate his camera for single-frame exposure sequences, but there have also been instances where he has made such shots by operating the single-frame release by hand. The intervalometer, he says, makes this type of cinematography easier and the spacing of exposures more accurate.

When shooting general scenes outdoors with color film, he usually determines exposure without the aid of a meter—a proficiency he has acquired during the thirty-five years he has been a photographer. However, Hunter considers a good exposure meter an important tool for every cameraman—at least until he develops the knack of evaluating exposure conditions by eye.

Careful preproduction planning is a factor which has helped Hunter achieve the success he has with his films. For instance, to present picturesque Cape Royal, in the Grand Canyon, in a novel and interesting manner, he photographed it at different times during the day in a sequence of shots that revealed its interesting terrain under progressively changing light conditions. To accomplish this, he first studied the scene for a day, observing how sunlight and shadow played upon the Cape and at what times they produced the most

pictorially interesting effects. He then arranged his shooting schedule accordingly.

On the screen the Cape first appears lighted by sunlight coming from the side, which accents its interesting modeling. To inject a measure of human interest into the sequence, he photographed the scene later in the day when it was completely frontlighted, and with two men climbing out on a rocky ledge. The contrast of the two figures tended to point up the immensity of the scene. To conclude the sequence, he then pictured the large rock in shadow, with the vast panorama behind it bathed in sunlight, which accentuated this area of the landscape for the first time in the sequence. These dramatically-photographed shots were carefully integrated in the editing so the narrator's description of the changing vista would have maximum impact.

On one of his more productive photographic jaunts, Hunter observed unusual fog conditions around an area of large rock formations. Most photographers would have scoffed at the suggestion that such a scene would make interesting movie material. But Hunter set up his camera, used the intervalometer again, and shot the scene in stop motion as the loftiest of the rocky spires piered the swirling mists. A less-imaginative cameraman might have passed this scene by because of the old bugaboo—inclement weather. For Hunter, the adverse weather *made* the scene.

Through the years Hunter has tried to break away from conventional cinematography and come up with something unorthodox. He began his career as a still photographer, then turned to 16mm cinematography after he joined Union Pacific Railroad. When Kodachrome film was introduced in 1934, he was one of the first professional 16mm cameramen to visualize its potentials in the field of commercial motion pictures. With color, he found a new outlet for his talents. Today, after producing some fifty travel, educational and promotional films, he still finds new avenues of approach to movie photography. Not all his pictures, of course, are made up of off-beat shots. Unusual sequences are used in a film only when a purpose is served by their inclusion.

Perhaps the two most memorable sequences that have appeared in Hunter's long list of motion picture films are those which show the sea breaking on the Oregon coast, and dusk enveloping Bryce Canyon.

The first required ten visits to the location where, during a change in the tides the sea foams over the rugged rocks rimming the coastline. On the tenth visit Hunter found the sea's performance just right and filmed it dramatically in slow motion.

To give a finishing touch to the sequence, if not to the picture as a whole, Hunter decided he needed one more shot—that of a majestic sunset playing on a tranquil sea in the foreground; so he went out and shot it.

The second of the two memorable sequences mentioned above was that of a scene which Hunter had personally witnessed a number of times but which hitherto had been overlooked by other travel film photographers—the changing pattern of Bryce Canyon during a sunset. On the screen, the colorful vista, filmed in stop motion, undergoes a continuing change in aspect as shadows lengthen until just the tips of distant pinnacles are tinged by the setting sun. As the sky darkens, the full moon grows in brilliance. Finally the scene fades to provide one of the most effective endings Hunter has made for his fascinating and unusual travel films. ■

HOMEMADE FILM BIN

Continued From Page 550

Fig. 3 shows method of mounting the tubular lamps in the header to furnish the light that is reflected against the film from behind. Two lamps are all that are required and the sockets for same were mounted on a modified "L" bracket. The electric wire enters from the top through a 3/8" hole. The wire leading to the switch at the side is tacked to the inside of the bin frame with insulated staples. The bulb sockets were mounted as close as possible to the front of the header board to minimize direct glare from the naked lamps. The top was lined with aluminum foil before mounting; this produces a more even distribution of light. Interior of the shadow box was painted with flat white enamel.

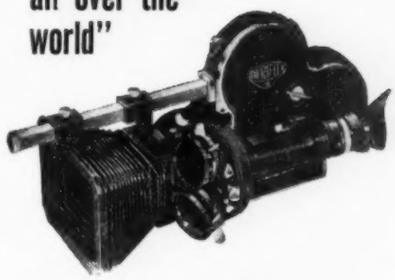
Fig. 4 shows the final operation: installing the bin liner. The top of the bin was lined with 1-by-2s. Thin slats were then nailed in such a manner that they protruded about an inch above the bin rim.

The toughest part of this whole operation was persuading my wife to make

ARRIFLEX 16

"preferred by professionals all over the world"

ARRI



The world's most versatile money-saving production camera and complete line of accessories now available for

sale · rent · lease

Write or call today for complete details

Glazer's CAMERA SUPPLY

1100 FIRST AVENUE • SEATTLE 1, WASH.

VIDEO FILM LABORATORIES

Established 1949

16mm Film Developing and Printing

16MM ANSCOCHROME
16MM B&W REVERSAL
16MM B&W NEGATIVE
16MM B&W POSITIVE

. . . NOW . . .

FASTAX IN COLOR

A.S.A. 100, 200 AND 400

350 West 50th Street
New York 19, N. Y.

IMAGINE!!
Only $119.50 For
A Complete
PROFESSIONAL
Portable Cine
Film Developing
Outfit...

WATSON
DEVELOPING OUTFIT
For 16-35-46-70mm Film

Professional standard for T.V. Stations, Newsreel Studios and Industry where speed and quality are essential, but price is a factor! Scratch proof!
25 ft., 100 ft., or 200 ft., Stainless Steel outfits—all film sizes. GUARANTEED. Priced from $84.50

BURKE & JAMES, INC
321 S. Wabash Chicago 4, Illinois

AC-959

BLOW-UPS
16mm Color to 35mm Color or B&W negatives, or to direct reversal Color prints, complete with Color corrections and optical effects.
SUPERIOR QUALITY, MAXIMUM DEFINITION, FINEST GRAIN
SPECIALIZED SERVICES
Finest Quality 16mm-35mm Duplicates in Color and B&W • Matte Paintings • Optical Printing • Special Photographic Effects of all kinds • Old and shrunken film duplicated on special equipment • Development work on new processes and equipment • Anamorphic Conversions.
New price list is now available.
FILM EFFECTS
of Hollywood, Inc.
1153 N. Highland Ave., Hollywood 38, Cal.
Linwood Dunn, ASC, President
"30 Years of Major Studio Experience"

EQUIPMENT SALE
- CAMERA
- LIGHTING
- GRIP
- MISCELLANEOUS

Send for complete listing
No obligation

ALLIED MOTION PICTURE CENTER, INC.
P.O. Box 4912
Washington, 8, D.C.
Phone: Hudson 3-3715

the cloth liner. This she made from an old bedsheet, formed it like an open box, with four sides and a rectangular bottom. Dimensions for the liner were about an inch less than those for the bin itself. Top of the liner is held in place by stretching it over the bin framework.

Overall dimensions of bin are height, 48 inches; width 22½ inches; and depth, 14 inches. Top of bin is 24 inches from floor. A wooden box of similar size could be substituted, with the film-holding rack and lights added at the top. ■

GADGET FOR SOUND MIXING

Continued From Page 552

After the device was developed and thoroughly tested, it was put to some very practical uses. One of the intensive uses was a location shooting job which was to be post-synchronized in the studio. A spring-wound camera was adjusted to as near 24 frames a second as possible and the microphone of the recorder placed on a pole boom. Slate and clapsticks were used at the beginning of each scene just as though it were synchronous shooting.

When the work print was obtained, each scene involving lip sync was pulled out and spliced into a loop. Then the film was notched where the clapstick closed. The sound was cued in the manner previously described using the clapstick sound as the first sound.

For post-recorded sound, the talent was placed in the recording studio and during the initial playback of the scene, the talent would hear the sound as it was recorded on location. During the second playback the talent would endeavor to speak the lines as they were recorded, while in the control room the tape was rewound to the starting cue. On the third playback, the original sound was played again and this procedure was continued until the talent could read their lines perfectly in sync. At this point the switch was thrown to direct the electrical impulse to a second recorder which was cued and pre-set on *record* and as the talent spoke their lines the voices were automatically recorded in sync with loop. This procedure was followed for all lip-sync scenes.

The next step was to edit these scenes into the work print in the proper places. As each scene was laid into the work print, the distance from the beginning of each scene as it would occur in the picture to the notch where the clapstick closed was accurately measured. Thus a notch could be placed in the work print prior to the scene being laid-in which would coincide with the original distance from the notch at the clapstick sound to where the scene was being used.

As soon as all scenes were edited properly the work print was notched for all of the recorded sounds including narration, sound effects, and music. The exact location of all notches were entered on the synchronization schedule for sound mixing, The sound mix was accomplished without difficulty by using two ¼-inch tape recorders feeding the various sounds to a 16mm recorder.

Since the development of this electrical tripping mechanism, the author has transferred to Wayne State University's Motion Picture Production Unit. Here the principal of the device is being used for many other purposes. One of the latest uses is automatic cutting of scenes during multiple projection. This is especially useful for showing prints of productions employing multiple camera shooting without manual cutting of the film.

The success and effectiveness of the electrical mechanism has helped to reinforce the author's philosophy that "practical ideas of an uncomplicated nature can help meet today's demands for 16mm films with an economy to coincide with the restrictions often imposed on the small or medium size production unit." ■

MAGIC-EYE CAMERAS

Continued From Page 557

After extensive practical use of this meter, it was found that situations were sometimes encountered where a reflected light reading was more practical for a particular scene—for example when shooting out of a window of an airliner in flight. This resulted in further improvement of the meter. It remained primarily a 3-D incident light meter but it could now be converted, when necessary, to also read reflected light. Similar progress is likely to follow in the further development of electric-eye cameras.

As a matter of fact, considerable research and development in this direction has been conducted in my laboratory in recent months, which has culminated in the application of the inci-

dent-light metering principal to electric-eye exposure control for an 8mm cine camera. The prototype camera is pictured in Fig. 1.

For general purposes, this camera has an incident light electric-eye with hemisphere light collector. The hemisphere and associated photocell constitute a sensing device which observes not only the intensity of the incident light but also whether the incident light is front-light, side-light or back-light—each of which has a different weight in illuminating the camera-side of the subject. This provides a high degree of photographic accuracy as well as great versatility. There is also a reflected-light electric-eye where unusual conditions are met that require this type of light metering (such as described above). Both electric-eyes are permanently mounted in a tower on top of the camera. Each is correctly oriented with respect to the camera-subject axis. Changeover from one to the other is accomplished simply by pushing a button.

The overall design of the light-metering unit provides benefits of rigid construction and eliminates need for separate accessory devices, such as interchangeable light collectors, etc. No less important is the pre-set control that adjusts the meter for the exposure index of the film used. There is also a latch on the lens iris ring for locking the diaphragm at any desired opening.

To use the camera under typical outdoor conditions, it is first pre-set for the ASA Index of the film being used. As outdoor illumination generally is more or less uniform over extended areas, the electric-eye is adjusted for reading incident light. From this point, exposure control is fully automatic. The lens iris will be properly set, regardless whether the scene is front-lighted, side-lighted or back-lighted. Flesh tones of foreground subjects will be properly exposed, whether the background is dark, light, or medium bright. Light or tone variations in a scene will not adversely affect such exposures—thanks to the unique incident light collector of the metering device.

Where there are continuing changes in the light level, such as that caused by moving clouds affecting the intensity of the sunlight, the incident light exposure control automatically and accurately responds to such changes and continuously adjusts the lens iris to produce a uniformly well-exposed strip of film.

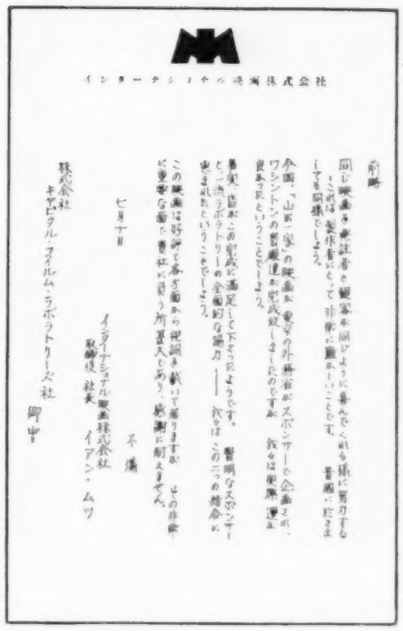
A slightly-different method of operation is followed where subject is in sunlight but the camera is in shade. Here the light falling on the incident-light hemisphere will not be the same as that falling on the subject in sunlight. So the camera is momentarily moved toward the subject until it is in the sun, where the hemisphere will receive and evaluate the same light as that falling on the subject. The lens iris is then locked in place for the opening established by the electric-eye, and the camera returned to shooting position in the shade to film the picture.

Where pictures are photographed indoors with artificial illumination, the procedure is to take the camera to subject location in a manner similar to using an incident-light exposure meter. Here the camera exposure controls automatically adjust the lens iris for correct exposure, and the iris is then locked for this exposure by the operator. The camera is then returned to operating position and the scene filmed.

To shoot scenes with this camera in unusual situations, such as out of an airliner window, as previously described, the electric-eye control is shifted from incident to reflected light by means of the selector button. The lens iris now will be controlled by light reflected from the scene—adequate for shots of this type.

Thus, with this dual automatic exposure control, just about any type scene or subject can be photographed with resulting good exposure. The convenience of operation is so extraordinary, it has to be experienced to be appreciated. And since the majority of shots are made on the basis of incident light evaluation by the camera's electric-eye, exposures will have a high order of accuracy—important to those who use relatively critical color films.

Thus, far, the objective has been to provide utmost convenience and exposure accuracy for users of 8mm cine cameras. But it is not unlikely that some of the principles of this development may very well be adapted to some types of professional motion picture cameras. For instance, such dependable electric-eye exposure control would be a boon in newsreel photography where set-up time invariably is extremely limited, and it could be helpful also as an adjunct to cameras used for many scientific purposes. ■



For what he said please turn page.

TELEPHONES:
28-5778/9
23-1844

INTERNATIONAL MOTION PICTURE CO., INC.

CABLE ADDRESS:
"IANMUTSU" TOKYO

KATAKURA BLDG. KYOBASHI 3-2, CHUO-KU, TOKYO, JAPAN.

∴ *Television, Promotional, Documentary, Travelogue, Industrial and Educational Films* ∴

Capital Film Laboratories, Inc.
1905 Fairview Ave., N.E.
Washington 2, D.C.

ATTN : Mr. Art Rescher

Dear Art:

Try to please the client and the audience at the same time with the same picture - this is the question that sends many a producer to the madhouse ; I imagine it is the same in the U.S.A. as it is in Japan.

This time I think we were lucky - with the "Yamadas at Work" picture sponsored by the Ministry of Foreign Affairs in Tokyo and completed for us by you in Washington, D.C.

Practically everybody seems to be satisfied with the result. We seem to have a happy combination of an enlightened sponsor and first-rate cooperation from a first-rate lab.

You are entitled to a big share in the congratulations we have received for this picture.

Cordially,

INTERNATIONAL MOTION PICTURE CO., INC

Ian Mutsu
President

IM/sn

What He Said

• Sound • Editorial • Laboratory Services

Capital

CAPITAL FILM LABORATORIES, INC. • 1905 FAIRVIEW AVENUE, N. E.
WASHINGTON 2, D. C. • PHONE LAWRENCE 6-4634

CAMERA STABILIZER

Continued From Page 558

bilization is reduced when the stabilizer is attached to cameras weighing considerably more.

The unit is of all-metal construction and hermetically sealed. Power to actuate the gyro is supplied by a small nickel cadmium battery, usually carried on a shoulder strap. The battery will operate the gyro continuously for a period of approximately two hours.

A series of inverters ranging from six to thirty-two volts are available for operating the Gyro from auto, boat or airplane. A converter is also available for operating it on regular 155-volt house current.

The Kenyon Gyro Hand Stabilizer and accessories are distributed exclusively in the western states by Gordon Enterprises, Inc., North Hollywood, Calif. ■

AURICON CINE-VOICE

Continued From Page 549

camera motor fitted with a 10-foot extension cord. A synchronous motor is optional at extra cost. Both motors take standard 115-volt A.C. house current, or current from a portable power supply. Stopping and starting of motor is by means of a toggle switch at rear of camera.

As the term "single-system sound" implies, the sound track is recorded simultaneously with the picture on the same strip of film, but with the relative sound 26 frames ahead of the corresponding picture. The sound recording apparatus is mounted within the camera case and is virtually an integral part of the camera mechanism.

It consists of the modulating unit or galvanometer, sound track exposure lamp and sound recording sprocket. Threading the camera with film according to the film path inscribed on the inner camera case, prepares the film for both picture and sound exposures.

Augmenting the Cine-Voice II sound camera is the Auricon Cine-Voice amplifier-mixer unit with self-contained batteries. On the sloping panel are two meters: one that indicates the sound track exposure and also affords a check on "A" and "B" battery voltages; the other, a visual sound-recording volume-indicator meter. Also there is a microphone volume-control

knob, sound quality selector switch, and sound track exposure control knob. Conveniently located on top of this unit are the output jack for monitoring headphones; sound output receptacle; and amplifier microphone input.

The equipment provides for two ranges of sound track exposures: *low* for ultra-fast negatives that are to be given accelerated processing, which provides exposures from 7 to 11; and *high* for use with all reversal type films, which provides exposures ranging from 11 to 20.

Portable plug-in type batteries are used to operate the amplifier and also the sound track exposure lamp. These are located in the battery compartment, under the amplifier. The batteries are standard types commonly used in portable radios, etc.

In order to use the Cine-Voice camera in locations where standard 115-volt power is unavailable, a portable power supply unit may be had from Berndt-Bach, Inc., at additional cost. This unit furnishes 115-volt, 60 cycle A.C. power—adequate for any remote camera operation.

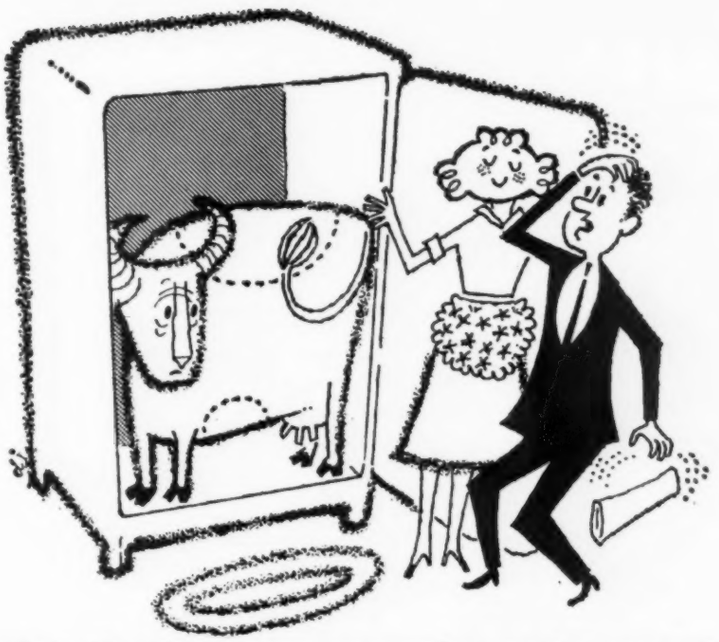
The makers of the Auricon Cine-Voice camera do not recommend that it be re-built or otherwise modified to take oversize film magazines. They point out that the camera's sound recording and film flow mechanisms are balanced for take-up of film in 100-foot rolls only, and that any added takeup pull exerted on the sound recording sprocket — which would be necessary where larger than 100-foot spools of film are used—will seriously unbalance the film - flow filter - drive system, and tend to cause inefficient camera operation and poor quality sound recording. Where more than 100-foot film capacity is desired, the company recommends using the Auricon Pro-600 or Super-1200 cameras—both of which will be described in subsequent issues of *American Cinematographer*. ■

MOVING?

When changing your address, please notify us at least four weeks in advance. BE SURE to give your Former address as well as your New address. Our Circulation Department needs both addresses in order to properly identify your address stencil.

Your cooperation will insure that American Cinematographer will continue coming to you regularly without delay or omission of issues. Thank you.

—American Cinematographer



Why buy the Cow when you only need a quart?

Smart Pros rent their equipment from CECO*

Why invest a lot of money for expensive photographic equipment for which you may have only limited use? Do what the top Pros do—rent your cameras, lighting, sound recording and editing equipment from CECO's vast stocks. Everything is delivered to you "better than new"—because everything is checked out for perfect performance before it goes out on rental. You save on taxes, too. Ask us about rental-lease arrangements.

Cameras
16mm & 35mm—Sound (Single or Double System)—Silent — Hi-Speed

Lenses
Wide angle—Zoom—Telephoto—Anamorphic

Sound Equipment
Magnetic—Optical

Grip Equipment
Parallels—Goboes—Other Grip accessories

Dollies
Crab—Western—Portable—Panoram—Cranes

Lighting
Arcs—Incandescents—Spots—Floods—Dimmers —Reflectors—All Lighting Accessories

Generators
Portable—Truck Mounted

Editing Equipment
Moviolas—Viewers—Splicers—Rewinders

Projection Equipment
16mm & 35mm—Sound & Silent—Slide—Continuous

Television
Closed Circuit TV

*CECO Trademark of Camera Equipment CO

FRANK C. ZUCKER

CAMERA EQUIPMENT CO., INC.

Dept. A 315 West 43rd St., New York 36, N. Y. ● JUdson 6-1420

"THE CINEMATOGRAPHER"

Informational and instructive motion picture produced by the Hollywood Motion Picture Industry. Depicts role of the Director of Photography in lighting and photographing motion pictures in Hollywood studios. Shows various camera and lighting equipment used on Hollywood sound stages and the results achieved from their use.

One-reel 16mm black-and-white prints available on Free Loan to cine clubs, college cinema groups, schools, and accredited clubs and civic groups within the continental U.S. Reservations necessary and payment of return shipment required.

AMERICAN SOCIETY OF CINEMATOGRAPHERS

1782 North Orange Drive ● Hollywood 28, Calif.

NOW! FOR THE FIRST TIME
SPECIAL PURCHASE
BRAND NEW
HOLMES 35MM. PORTABLE

AT $599.50
Factory List Price $2015

HERE'S THE AMAZING DEAL

2 — Holmes Ball Bearing 35 mm. Portable Sound Projectors constant speed motors, 1000 watt Mazda lamphouses, 2000' upper and lower magazines, photocells, exciter lamps, etc. (Brand New). 2—Series 1 4" lenses, with adapters (New). 1—Set projector, photocell and exciter lamp cables (New). 1—Amplifier, late model, 25/30 watt output (Rebuilt like New). 1—Jensen Heavy Duty 12" PM speaker, with baffle and 75 feet cable guaranteed same as new.

STAR CINEMA SUPPLY CO.
621 West 55th Street, New York 19, N.Y.

MOVIOLA

FILM EDITING EQUIPMENT
16MM - 35MM

- PICTURE SOUND Photo and Magnetic
- SYNCHRONIZERS
- REWINDERS

One of the new series 20 Moviolas for picture and sound.

Write for Catalogue

MOVIOLA MANUFACTURING CO.
1451 Gordon St. • Hollywood 28, Calif.

Automatic Daylight Processing

DEVELOPING TANK
- Processes up to 400 Ft.
- 8mm-16mm-35mm-70mm
- Movie—X-Ray—Microfilm
- Motor driven portable
- Tough plastic tanks
- Uniform Density Assured

FILM DRYER
- Motor driven—Heated
- Speedy drying
- Automatic shrinkage allowance
- Stainless steel and aluminum construction
- Easily assembled without tools
- Compact, Portable

Guaranteed. Write for Free Literature

Micro Record Corp. 487-14 South Ave. Beacon, N.Y.

COLOR IN MOTION PICTURES AND TV

Continued From Page 543

The red, green, and blue filters used in the camera are visibly different in color from those used in the 3-projector system. The "taking," or separation, filters are "broad band" and somewhat pale (unsaturated) in color because each must include about one-third of the entire spectrum. The "reproduction" filters used in additive projection, on the other hand, transmit only the narrowest portions of the spectrum to give the purest, most saturated primary colors. These critical primary wavelengths are close to 700 millimicrons for red, 525 for green, and 460 for blue (ultramarine), and the combined primary beams are adjusted in intensity to reproduce colorless, or white, objects in the pictures as a white similar to diffused daylight (standard Illuminant C having a color temperature close to 6500° K). It is interesting to note that subtractive theatre-release prints, such as Technicolor, are also balanced for this particular color temperature, which is close to that of the projection arc.

Now, the simple color-reproducing system outlined by the foregoing is called an *additive* process because it is based upon the simple addition of primary lights (red, green, blue) in various proportions on a screen to reproduce all conceivable colors. It is capable of extremely faithful and vivid color reproduction, and is, in essence, the system employed in color television.

Subtractive color involving the formation of colored images on film or paper by virtue of the selective light-absorbing (subtracting) properties of dyes and printing inks, will come up for examination later. It suffices for the present to remind the reader that the "subtractive primaries" (cyan, magenta, lemon) are the exact opposites of the physical primary colors, and that the mixing of colored dyes produces results quite different from the results obtained by combining colored lights, as will be explained in Part II of this article. Yellow, for example, is produced additively by mixing red and green lights in certain proportions. In the subtractive method, yellow (lemon) is one of the "primaries," and cannot be made by mixing dyes of any other colors.

The additive color process, as we said, is capable of remarkably realistic color. In fact, it is superior to the subtractive process in many ways, one of which is its complete independence from the absorptive vagaries of subtractive dyes. This does not mean that additive color is a perfect process, for aside from limitations peculiar to itself, the nature of human color vision is such that no 3-color process can reproduce *all* colors *perfectly!*

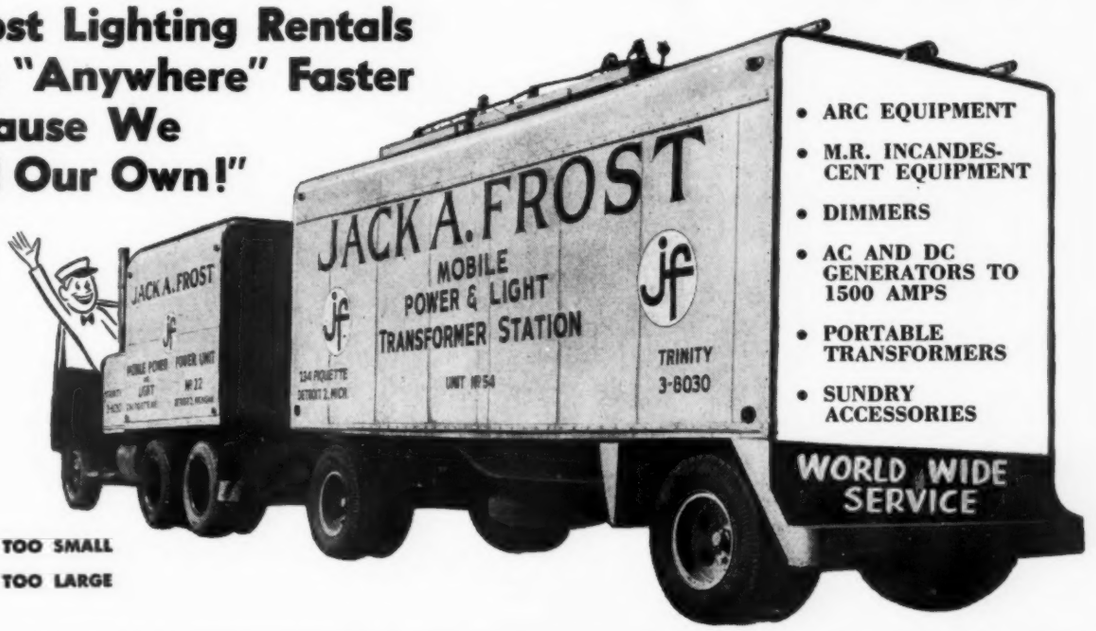
Most colors can indeed be recorded and reproduced to perfection, but there is a point at which the 3-color theory breaks down. When we encounter the brilliant spectrum colors, as when attempts are made to photograph the spectrum in natural color, we find to our dismay that there are limits to the vividness with which some of the hues (usually the blue-greens and violets) can be "captured" on film or the 3-color TV kinescope.

If the trichromatic theory of color were as simple as we might wish it to be, we could "diagram" all possible "chromaticities" by a triangle having the selected primary hues (red, green, blue) at its apices and a point representing white (such as Illuminant C or any other chosen standard white) near its center. (Fig. 2). The spectrum colors, which are the most vivid hues possible, would be located on the sides of the triangle — the oranges and yellows on the side between red and green, and the aquamarines and cyans on the side between green and blue. The bottom side contains the spectrum violets and the nonspectral purples and magentas.

Experiments in additive color mixing have conclusively proved, however, that the most vivid mixture colors produced with any specific set of primaries are not quite as vivid as the spectrum colors in one region or another of the spectrum. For example, if yellow-green is used as a primary along with red and blue, the yellow-green and red mixtures will be as vivid as the spectrum oranges and yellows, but the mixture blue-greens will be considerably "washed out," or desaturated. If a slightly bluish green is used as a primary, the mixture blue-greens will match the spectrum blue-greens in vividness, but the mixture oranges and yellows will be desaturated. A more neutral green primary results in slight desaturations in *both* the blue-green and yellow colors! The other two primaries (especially blue) pose similar difficulties.

These facts imply that each color

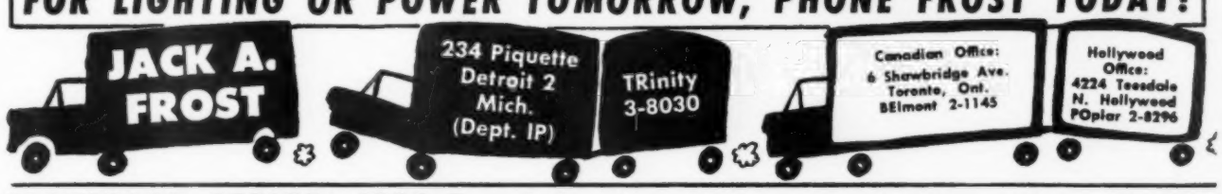
"Frost Lighting Rentals Get "Anywhere" Faster Because We Roll Our Own!"



- ARC EQUIPMENT
- M.R. INCANDESCENT EQUIPMENT
- DIMMERS
- AC AND DC GENERATORS TO 1500 AMPS
- PORTABLE TRANSFORMERS
- SUNDRY ACCESSORIES

NO JOB TOO SMALL
NO JOB TOO LARGE

FOR LIGHTING OR POWER TOMORROW, PHONE FROST TODAY!


JACK A. FROST
234 Piquette Detroit 2 Mich. (Dept. IP)
TRinity 3-8030
Canadian Office: 6 Shawbridge Ave. Toronto, Ont. BEImont 2-1145
Hollywood Office: 4224 Teesdale N. Hollywood POplar 2-8296

HOLLYWOOD OFFICE: 4224 Teesdale, No. Hollywood, Calif. • POplar 2-8296

receptor of the eye responds in a greater or lesser degree to the *entire* visible spectrum, but is *most sensitive* to a band of wavelengths which extends over one-third of the spectrum, approximately. There are thus no wavelengths which stimulate *just one* of the three visual color receptors without stimulating the other two by a slight amount. In other words, there are no *pure* primary colors!

The color triangle is nevertheless a convenient device. By drawing it as a right triangle on graph paper, two coordinates (usually corresponding to red and green and denoted by the letters x and y) are sufficient to locate any color. The numerical value of the third coordinate (blue, or z) is found by subtracting the sum of the other two from 1, inasmuch as the values red + green + blue (or $x + y + z$) = 1. Complementary colors are located by drawing lines from the colors in question to the opposite sides of the triangle through the arbitrary white, or neutral, point. The additive mixtures of any two colors lie on a straight line connecting the two colors.

This is the latest IMPROVED

CINEKAD JUNIOR DOLLY

Used Nationally by Discriminating Cameramen

This 3-Wheel Collapsible Dolly is

especially designed to meet the demand for convenient mobility of cameras on location or in the studio.

Dolly can be used with any tripod. The special individual caster locking system makes it possible to lock either two or three wheels in a parallel position, enabling dolly to track in a straight line for rolling shots.

Dolly folds quickly into a compact, easy-to-carry unit, 23" in length, weighing 16 lbs.

The new model instead of the 4" wheels is constructed with 5" heavy duty rubber-tired swivel wheels.

Write for Prices and Literature

Cinekad ENGINEERING COMPANY
763 Tenth Avenue, New York, N.Y. • PLaza 7-3511

DESIGNERS AND MANUFACTURERS OF EQUIPMENT FOR MOTION PICTURES AND T.V.

385mm (15 in.) f/4.5
CENTURY SUPER TELE-ATHENAR!
TELE-LENS!

FOR SUPER-SHARP LONG RANGE SHOTS!

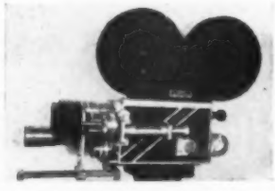
In Precision Focusing "C" or Kodak Mount.
RAZOR SHARP! COLOR-CORRECTED!
Lightweight (only 40 oz.!) **The only high power tele-lens designed especially for 16mm!** Not an adopted "soft" still camera lens. Fully guaranteed. Ideal for Bolex Reflex, etc. Reflex beam splitter finder for B&H, K-100, etc. $64.50 extra. (Removable.) For Arri add $16.50. Support bracket $24.50. Custom hard case $24.50. The ideal lens for wildlife. Shipped postpaid, insured. A money-making lens. Now widely used by NBC-TV, CBS-TV, U. S. Gov't, Navy, etc. Made in U. S. A.

CENTURY
PHOTOGRAPHIC EQUIPMENT CO.
10659 BURBANK BLVD. NO. HOLLYWOOD, CAL.

"Newest Improved Process"
LAMINATED SOUND STRIPING
QUALITY GUARANTEED
16mm & 8mm 2½c Per Foot
(Minimum 380 Ft.)—Via C.O.D. Mail
Since our thin (.0007") high output magnetic track does not require a balancing stripe, the film seats perfectly in the gate of your projector assuring sharp pictures when projected.

Nitatone

736½ S. Atlantic Blvd., Los Angeles 22, Calif.
ANgelus 8-0584



4-Lens turret Cine Special, Ektar lenses, positive viewfinder, 400 & 100-foot film mags., motor-drive, matte box, carrying case. A complete unit as new, only $2250.00. CINEMATIC DEVELOPMENTS, 2125 Thirty-second Avenue, San Francisco, California.

To Classified Advertisers
Copy deadline for classified advertising is the 1st of month preceding publication date. Mail copy and remittance to cover cost to
AMERICAN CINEMATOGRAPHER
1782 No. Orange Dr., Hollywood 28, Calif.

In order to preserve the validity of the handy color triangle in the face of the known deficiencies of the 3-color method of color production, therefore, three imaginary "supersaturated" primaries (X, Y, Z) had to be invented. The spectrum colors (which are the most vivid colors we can see) then form a horseshoe-shaped curve, or locus, when plotted on the color triangle. And since all real colors necessarily lie inside the spectrum locus and the so-called "purple line" which connects its violet and red extremities, only the locus, and not the whole X, Y, Z color triangle, is usually printed in technical discussions of color problems. You will encounter this "C.I.E. chromaticity diagram" (Fig. 3) (standardized by the Commission Internationale de l'Eclairage) many times in the literature of color motion pictures and television.

Now then, any 3-color reproduction process makes use of three primaries located on or near the spectrum locus; and when these three colors are connected by straight lines to form a triangle of mixture colors, it can be seen at once that most of the vivid spectrum colors (and the nonspectral purples and magentas of maximum saturation) lie somewhat outside the boundaries of the triangle. This is true no matter how carefully we choose our red, green, and blue primaries! A good set of primaries encloses a larger gamut of colors than a poor set, of course; but *some* of the spectrum colors must lie outside the triangle and represent colors too vivid to be reproduced by the system in full saturation.

Much as we may regret this state of affairs, the color fidelity of 3-color films and TV is not affected too adversely. Very few of the colors encountered in nature even begin to approach the spectrum hues in saturation. It has been found, however, that the most practicable gamut is formed by red, green, and ultramarine-blue primaries having the wavelengths 700, 525, and 460 millimicrons, respectively (Fig. 4). The "inclusiveness" of all color motion-picture and TV gamuts may be reliably judged on the basis of this one.

TO BE CONTINUED

TECHNICAL QUESTIONS AND ANSWERS

Continued from Page 536

simple distorition lens. A similar effect can be produced by placing an anamorphic lens in front of the regular camera lens. The "squeeze" effect can be made horizontal, vertical, or any other angle merely by rotating the anamorphic lens. Still other effects can be produced by using a prism or a combination of simple lenses, which are available from most opticians.

You can also produce unusual distortion effects by photographing objects inside or behind clear jars or tanks filled with water or other liquids.

When cost is not a deterrent, virtually any effect can be created by optical printing. — *Ralph Woolsey, A.S.C.*

Q What source of light is called the "key" light? Also, can you explain, roughly, how directors of photography go about setting up their lights for motion pictures?—*K. K. N., New York.*

Answer: The key light is considered the source or main direction of light used to illuminate the principal characters. Key light means source light. It may be strong, or very soft. It may be "hard," simulating sunshine, or soft—as the light reflected on the subject from some adjacent surface. It can be all-enveloping light, such as found in a shaded area.

Set lighting patterns are dictated by the requirements of the scene to be photographed (what it is about; time of day or night). In other words, where should the light come from and what are its visible sources? What is the mood required? These considerations set the pattern for the placement of lights.—*George Folsey, A.S.C.*

Q Will use of Eastman reflex finder magnifier cause insufficient brilliancy in finder? I don't like rectifying this condition by sacrificng depth of field, which would result were the shutter opening reduced.—*S. L. E., Boston.*

Answer: The Eastman reflex magnifier does not diminish brillancy in the finder.—*Walter Strenge, A.S.C.*

DOCUMENTARY FILM TECHNIQUES

WHAT, EXACTLY does the word "documentary" mean? What is it that sets this type of film apart from other types of motion pictures: the newsreel, the training film, the photoplay?

First of all, the documentary film is not merely a "record" film. It goes beyond the plain recording of facts. Rather, its function is to picture and evalute varied phases of our contemporary social scene—not just the shabby side, but all sides. Unlike the newsreel which presents facts strictly as they happen, the documentary goes behind the scenes, asks "why?", analyzes the factors involved, and usually arrives at a conclusion based on the facts.

Like the newsreel, it is a form of cinematic journalism, but whereas the newsreel resembles an average news item that sketches the facts, the documentary can be compared to a newspaper feature article that treats the subject with a much wider scope.

It differs, too, from the training film which tells *how* to do this or that—also from the photoplay, the main function of which is entertainment. And yet, it has some elements of all these.

The documentary film is not so much like a mirror that reflects life exactly as it is. It is more like a realistic painting that takes the facts, groups them into a forceful composition, and adds the color of its own particular technique, thus enriching the observations that are made.

Its function may be historical, educational, or purely informative. But in any case, it is a social force to be respected. Like all social forces it can be misused, can become an instrument of clumsy propaganda. It is the responsibility of the documentary film maker to guard against this and to present only the truth on film.

—Herb A. Lightman

BOLEX ACCESSORIES BY STEVENS

Variable Shutter • Split-Frame Mask • Synchronous and Battery Camera Drives • Time Lapse Timer • Lens Extension Tubes • Rackover • Turret Lever • Third Turret Stop • Turret Filter Slides • Camera Base • Lens Control Handle • 400-Ft. Magazine • Sound Sprockets

Write for our Bolex Accessory Catalog.

OUR NEW ADDRESS

Stevens Engineering Co., Dept. A
340 N. Newport Blvd.
Newport Beach, Calif.

VARIABLE SHUTTERS
and Automatic Dissolve Attachments for ALL BOLEX H CAMERAS.

The real answer to fades, lap dissolves and controlled shutter speeds. Send for free information.

PELLEGRINI-PIEK
1545 Lombard St.
San Francisco 23, Calif.
ALSO DUAL POWER VIEWER FOR BOLEX RX

Used World-Wide By Discriminating Cameramen

CINEKAD SYNCHRONOUS MOTOR DRIVE—For 16mm Projectors

Especially designed to drive all Bell & Howell, Ampro, Kodak, RCA, and Victor 16mm projectors at synchronous speed.

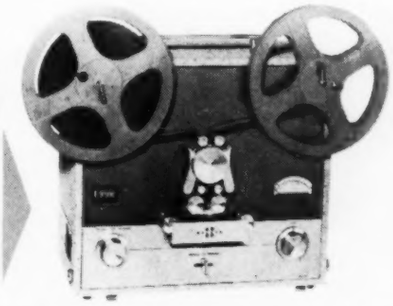
Projector can be instantly attached to Synchronous Motor Drive and quickly detached at any time in a matter of seconds. An outstanding feature is the flexible shaft which connects motor with projector and permits smooth, quiet and steady operation. No special technical knowledge required for installation and mounting. *Write for more details and prices.*

One-year Guarantee! Immediate Delivery!

CINEKAD ENGINEERING COMPANY, 763 10th Ave., N.Y., N.Y., PLaza 7-3511

HALLEN...
transistorized...portable...
magnetic film recording system

The HALLEN Model 1216 Magnetic Film Recorder is a completely transistorized professional "lipsync" unit engineered expressly for motion picture, television and audio-visual recording in the studio and on location. It is built to specifications which exceed standards adopted by the Motion Picture Research Council. **Write today for complete description and technical data.**



HALLEN

HALLEN ELECTRONICS, DIVISION OF SCHOEN PRODUCTS
332 N. LaBrea Ave., Los Angeles 36, Calif. • WEbster 1-5343

PHONE • NORMANDY 3-9331

RAY MERCER & CO.

TITLES • • SPECIAL EFFECTS • • FADES
WIPES • • MATTES • • SUPERIMPOSURES
DISSOLVES • • INSERTS • • ANIMATION
MINIATURES • • TRICK PHOTOGRAPHY
CINEMASCOPE • • BLK & WHT • • COLOR

SEND FOR FREE SPECIAL EFFECTS CHART
4241 NORMAL AVE. HOLLYWOOD 29, CALIF.

PHOTOGRAPHIC ASSIGNMENTS

Continued From Page 528

PARAMOUNT

ALDO TONTI, "Savage Innocents" (Magic Films; shooting in Canada) with Anthony Quinn and Yoko Tani. Nicholas Ray, director.

MARIO MONTUORI, "A Breath of Scandal" (Ponti-Girosi Prod.; shooting in Rome) with Sophia Loren and Maurice Chevalier. Michael Curtiz, director.

PARAMOUNT SUNSET

WALTER STRENGE, ASC, "Oklahoma Territory" (Premium Picts.; UA release); with Bill Williams and Gloria Talbott. Edw. L. Cahn, director; "Noose for a Gunman" (Premium Picts. for UA release) with Jim Davis and Ted De Corsia. Edw. L. Cahn, director.

RAY FOSTER, ASC, Commercials*

PRODUCTION CENTER, N.Y.

GEORGE J. STOETZEL, ASC, "Deadline"* (Pyramid Prods.) with Paul Stewart. David Alexander, director.

REPUBLIC STUDIOS

GEORGE DISKANT, ASC, "June Allyson Show"* (Four Star Prods.) with June Allyson; "Robert Taylor Detectives"* (Four Star Prods.) with Robert Taylor.

GUY ROE, ASC, GEORGE DISKANT, ASC, "Dick Powell's Zane Grey Theatre"* (Four Star Prods.) with Dick Powell.

GUY ROE, ASC, "Black Saddle"* (Four Star Prods.) with Peter Breck and Russell Johnson.

CHARLES BURKE, "Wichita Town"* (Four Star Prods.) with Joel McCrea; "Johnny Ringo"* (Four Star Prods.) with Don Durant and Karen Sharpe.

HOWARD SCHWARTZ, "The Rifleman"* (Four Star Prods.) with Chuck Connors and Johnny Crawford.

EMMETT BERGHOLZ, "Troubleshooters"* (Filmaster Prods.) with Keenan Wynn and Bob Mathias, Robert Altman, director; "Death Valley Days"* (Filmaster Prods.)

REVUE STUDIOS

RUSSELL METTY, ASC, "Spartacus" (Technirama; Bryna Prods.) with Kirk Douglas and Laurence Olivier. Anthony Mann, director.

PHIL LATHROP, "The Private Lives of Adam and Eve" (Zugsmith-Doff Prod.) with Mickey Rooney and Mamie Van Doren. Albert Zugsmith and Mickey Rooney, directors.

ELLIS THACKERY, ASC, WILLIAM SICKNER, "Wels Fargo"* (Overland Prods.) with Dale Robertson.

MACK STENGLER, ASC, "Leave it to Beaver"* (Gomalco Prods.) with Barbara Billingsley and Hugh Beaumont. Norman Tokar, director.

BENJ. KLINE, ASC, "Wagon Train"* with Ward Bond. (Revue Prods.)

RAY RENNAHAN, ASC, "Whispering Smith"* (Revue Prods.)

LIONEL LINDON, ASC, RAY RENNAHAN, ASC, "Riverboat"* (Revue Prods.)

JONN WARREN, ASC, LIONEL LINDON, ASC, RAY CORY, ASC, "Staccato"* (Revue Prods.)

GILBERT WARRENTON, ASC, WILLIAM SICKNER, ASC, JOHN WARREN, ASC, "M Squad"* (Revue Prods.)

RAY CORY, ASC, "Bachelor Father"* (Bachlor Prods.) with John Forsythe.

ELLSWORTH FREDRICKS, ASC, LIONEL LINDON, ASC, "General Electric Theatre"* (Revue Prods.)

JOHN RUSSELL, ASC, RAY RENNAHAN, ASC, "Laramie"* (Revue Prods.)

LIONEL LINDON, ASC, JOHN RUSSELL, ASC, RAY CORY, ASC, NEAL BECKNER, "Markham"* (Revue Prods.) with Ray Milland.

JOHN WARREN, ASC, LIONEL LINDON, ASC, JOHN RUSSELL, ASC, "Alfred Hitchcock Presents"* (Revue Pords.)

RAY CORY, ASC, JOHN WARREN, ASC, ELLIS THACKERY, ASC, "Mickey Spillane's Mike Hammer"* (Revue Prods.)

SCREEN CLASSICS

CLARK RAMSEY, ASC, "Ma Barker and Her Killer Brood" (Screen Classics Prod.) with Lurene Tuttle. Wiliam Carn, director.

TWENTIETH CENTURY-FOX

WILLIAM MELLOR, ASC, "The Best of Everything" (C'Scope & Color; Jerry Wald Prods.; shooting in N.Y.) with Hope Lange and Stephen Boyd. Jean Negulesco, director.

LEO TOVER, ASC, "A Journey to the Center of the Earth" (C'Scope & Color) with Pat Boone and James Mason. Henry Levin, director.

OTTO HELLER, "A Dog of Flanders" (C'Scope & Color; Radnitz Prod.; shooting in Amsterdam) with David Ladd and Theodore Bikel. James Clark, director.

MAURY GERTSMAN, ASC, 'Adventures in Paradise"* with Gardner McKay and Weaver Levy.

LEON SHAMROY, ASC, "Beloved Infidel" (Co. of Artists Prod.) with Gregory Peck and Deborah Kerr. Henry King, director.

CHARLES CLARKE, ASC, "Hound Dog Man" (Co. of Artists Prod.) with Stuart Whitman and Carol Lynley. Don Siegel, director.

FLOYD CROSBY, ASC, "The Last Rookie" (C'Scope; A'I) with Tommy Noonan and Pete Marshall. George O'Hanlon, director.

WILLIAM DANIELS, ASC, "Can-Can" (Todd-AO; Jack Cummings Prod.) with Frank Sinatra and Shirley MacLaine. Walter Lang, director.

JORGE STAHL, JR., "The Girl in the Red Bikini" (Edw. L. Alperson Prod.; C'Scope; shooting in Majorca) with Mark Stevens and Joanne Dru. Byron Haskins, director.

JOE MACDONALD, ASC, "Five Fingers"* with David Hedisen and Luciana Paluzzi.

KARL STRUSS, ASC, "The Belvedere"* (pilot) Norman Tokar, director.

WARNER BROS.

JAMES DROUGHT, Commercials*

RALPH WOOLSEY, ASC, ROGER SHEARMAN, "The Alaskan"*

MARK DAVIS, ASC, Commercials*

ROGER SHEARMAN, Perry Finnerman, "Lawman"* with John Russell.

J. PEVERELL MARLEY, ASC, "Cheyenne"* with Clint Walker.

JACK MACKENZIE, ASC, "Sugarfoot"* with Will Hutchins.

EDWIN DUPAR, ASC, "Hawaiian Eye"*

ARTHUR ARLING, ASC, Commercials*

BERT GLENNON, "Captain Buffalo" with Jeffrey Hunter and Constance Towers. John Ford, director.

JOSEPH BIROC, ASC, "Ice Palace" (Shooting in Alaska) with Richard Burton and Robert Ryan. Vincent Sherman, director.

EDWARD COLMAN, ASC, "—30—" (Mark VII) with Jack Webb and Wiliam Conrad. Jack Webb, director.

HAROLD STINE, ASC, JACK MACKENZIE, ASC, WESLEY ANDERSON, "Maverick"* with Jack Kelley.

CARL GUTHRIE, ASC, CARL BERGER, ASC, "Bourbon Street Beat"* with Andrea Duggan and Richard Long.

CARL BERGER, ASC, HAROLD STINE, ASC, "77 Sunset Strip"* with Efrem Zimbalist, Jr.

CARL BERGER, ASC, WESLEY ANDERSON, "Bronco"* with Ty Hardin.

PROGRESS
LOYALTY ASC ARTISTRY

AMERICAN SOCIETY OF CINEMATOGRAPHERS

FOUNDED January 8, 1919, The American Society of Cinematographers is comprised of the leading directors of photography in the Hollywood motion picture and TV film studios. Its membership also includes cinematographers in foreign lands. Membership is by invitation only.

OFFICERS

Walter Strenge, President
Lee Garmes, 1st Vice-president
Hal Mohr, 2nd Vice-president
George Folsey, 3rd Vice-president
Arthur Miller, Treasurer
Charles Clarke, Secretary
Robert de Grasse, Sergeant-at-Arms

BOARD OF GOVERNORS

Joseph Biroc, Burnett Guffey, Milton Krasner, Ray Rennahan, Harold Rosson, Joseph Ruttenberg, John Seitz, Phil Tannura.

ALTERNATE BOARD MEMBERS

Sol Halprin, Loyal Griggs, Paul Eagler, Daniel Fapp, Thomas Tutwiler, Joe MacDonald, George Clemens, James Van Trees, Charles Salerno, Jr., Stanley Cortez.

CLASSIFIED ADVERTISING

RATES: Ads set in lightface type, 10c per word, minimum ad, $1.00. Text set in lightface capital letters (except 1st word and advertiser's name) 15c per word. Modified display format (text set in boldface type, capitals or upper-and-lower case) 90c per line. Send copy with remittance to cover payment to Editorial Office, American Cinematographer, 1782 No. Orange Drive, Hollywood 28, Calif. Forms close 1st of month preceding date of issue. No discount on Classified Advertising.

STUDIO & PRODUCTION EQUIP.

CAMERAS 35mm

MITCHELL NC HEAD, stripped, needs considerable repairs ..... $ 695.00
ARRIFLEX II, 3 excellent lenses, 2-400′ magazines, mattebox, Deluxe case. $2800.00 value 1295.00
ARRIFLEX I, 3 fast lenses; 200′ magazine; mattebox; sunshade etc. $1700 value 675.00
CAMERAFLEX (Cineflex), 4 lenses—35/50/75/150mm; 2-200′ and 1-400′ magazines; 24V motor; accessories. $2500.00 value 695.00

CAMERAS 16mm

AURICON SUPER 1200 with TVT shutter; 2-1200′ magazines; VD sound; Pan Cinor 70 zoom lens; cases. $6250.00 value $4495.00
AURICON PRO 600 with 3 lens turret; Parallax finder; zoom door; critical focusser; telefinder optics; Modulite VA sound; 2-600′ magazine; tripod; cases; 16/25/75mm lenses; matched objectives. $4600.00 value 2995.00
AURICON PRO 200 Sound Camera w/3 lens turret, parallax finder; variable area sound; cases. Excellent 1295.00
MAURER Model 05 Camera, 3 lens turret, Model 06 Erect Image Viewfinder, 1-400′ magazine, sunshade & mattebox, syncmotor, carrying case. $5600 value. Excellent 2250.00
Same as above but with 1200′ magazine 2750.00
MAURER Modified 05, syncmotor; 400′ magazine; 4 lens turret. A new low 1495.00
B&H FILMO SPECIALIST, w/rackover; 400′ magazine; syncmotor; 2 viewfinders; less lenses. $1800.00 value 795.00

CAMERA ACCESSORIES

MOTORIZED 4 wheel DOLLY, similar to Houston or Raby. Has hihat; revolving head; 7′ boom height; seats for cameraman and assistant; brackets to carry 6 lights. Cost $4,000.00 to build $1095.00
NEW VISCOMATIC 3 SPEED FLUID TRIPOD heads, for most 16mm cameras 97.50
NEW VERSA-DOLLY combination outfit—dolly or triangle with clamps—hihat—baby tripod. $201.00 value 99.50
NEW Jr. type tripods with latest features 119.50
HI-HATS for Jr. type tripods. New, regularly $22.00 ..... 16.95
H.F. Heavy Duty Commercial Type Car Top Platforms, holds 800 lbs. Includes 4′x5′ non-skid top, removable ladder. $220 value 149.50

ANIMATION & SPECIAL EFFECTS

B&H 35mm Animation Cameras; 400′ magazine; dissolve. $3500 value $1795.00
Same with thru-lens-focussing 2250.00
HOT PRESS with 4″ typeholder; 3 way switch. $400.00 value, likenu 295.00
TEL-ANIMA-SCALE, Standard for Animation work. Reg. $2.50 ..... 1.25

LIGHTING EQUIPMENT

NORTHLITE INDIRECT REFLECTORS, latest type—2000 watt ..... $ 79.50
5000 watt 129.50
MR SINGLE BROADS on stands 59.50
MR DOUBLE BROADS on stands 89.50
BARDWELL-McALISTER 750W Baby Kegs with stands 57.50
B&M or MR 2000W Spots on stands. Excellent 99.95
5KW KLIEGL and MR SENIOR spots on stands, excellent 179.50
EXTENSION & POWER CORDS, 25′ w/half plug or box 22.50

RECORDING & PLAYBACK

REEVES 16mm MAGICORDER, transportable, mixer, amplifier complete. $4800 list $1095.00
MAURER 16mm RECORDING OUTFITS—mixer; noise reduction; amplification; voltage regulator; power supply; 400′ magazine. Late Model E negative/positive, $10,500.00 value 5995.00
Early Model D negative only 2995.00
WESTREX 35mm Optical Recorders, outright purchase, good condition 3500.00
RCA Photophone 35mm Optical Recording Heads; 1000′ magazine; less motor. No license required 2995.00
MR MIKE BOOM and 3 wheel tricycle type Perambulator 895.00

CUTTING ROOM EQUIPMENT

CHINA MARKING CRAYONS, brown, ½ price. Per doz. ..... $ 1.00
MOVIOLA SOUND PREVIEW 35mm UDPVCS, 8″x10″ large picture. $2250.00 value, reconditioned 1495.00
ACMIOLA PREVIEW machines, 6′x8½″ picture, motor driven feed and takeups, 35mm. $1500.00 value.. 475.00
SOS Jr. 16mm ACTION VIEWERS, brilliant picture 2″x3¼″. Reduced 89.50

LABORATORY

HOUSTON K-3 Reversal Processor; includes refrigeration temperature control; recirculation; airpump; stainless steel construction. $6000.00 value $3195.00
HOUSTON 35mm Model 2 Processors, neg/pos. w/refrigeration; recirculation; air pump; temperature control; speeds to 1200′ per hour. Gov't paid $10,000. Reconditioned 1995.00
HOUSTON 16/35mm Model 2, like preceding 2995.00
HOUSTON 16/35mm COLOR PROCESSOR, 40′ per minute. Magnificent stainless steel beauty—worth $25,000. Rebuilt like new 9995.00
FILMLINE Bridgamatic Jr. 16mm neg/pos. processor; variable speed transmission; reconditioned. $1700.00 value 1195.00

TRADES TAKEN **PL 7-0440** **Cable: SOSOUND**
Dept. fc

S.O.S. CINEMA SUPPLY CORP.
602 W. 52nd Street, New York 19
Western Branch—6331 Hollywood Blvd., Hollywood, Calif.
Phone HO 7-2124

16mm ARRI BLIMP (used on one job only) with sync motor, footage counter.
AKELEY GYRO-HEAD and tripod, excellent condition. 70 DR B&H, used one year, with 10mm Switar, 25mm F1.9 B&H lenses.
Best offer for one or all.
RODEL PRODUCTIONS, INC.
2424 G St. N.W.
Phone ME 8-2403 **Washington 7, D.C.**

MITCHELL single system sound camera, with RCA galvanometer. With or without accessories and lenses, reasonable. Eyemo motors, 6 Volt, used, as is, $24.50, excellent. like new $35.00 with cord and switch. Dealers discount in lots of 12. Cash with order please. JACK WALTON, P.O. Box 1457, Tampa, Fla.

AURICON Pro 600. Like new, used for shooting 400′ film, with three lens turret, critical ground glass focussing, tele-finder, optical system, lens hood, lens shade, 2-400′ magazines, Model S galvanometer, Model NR-25S7 amplifier, 2 cases. Cost over $3800.00. Sale price $2500.00. Auricon Cine Voice with amplifier, $400.00. BOB'S CAMERA SHOP, INC., 14006 Ventura Blvd., Sherman Oaks, California.

MOVIOLA 35mm sound optical and magnetic head and composite preview head with stand and casters, $750.00; Cine Special I with magazine and two lenses, $250.00; Cineflex 12V motor, new, $55.00; Mitchell #3 friction head, $150.00; RCA optical sound recording galvanometers, $125.00. MASTER FILM, 207 Third Street, Elizabeth, New Jersey.

STUDIO & PRODUCTION EQUIP.

35MM projection MOVIOLA, 35mm preview Moviola, 35mm Moviola with and without takeups, 35mm Model D Moviola, surplus, new. B&H 35mm hot splicing machine, foot model. Eastman 35mm waxing machine. Raby blimps for NC or Mitchell standard cameras. 2-speed Raby gearhead. 35mm backg ound projector, custom blimp, precision B&H type movements, excellent condition. B&H 35mm professional cameras. 1-35mm Wall single system sound camera with 2 register pins, pre-WW II, excellent condition. 1-16mm B&H rackover camera with 400′ magazine. M-R type 170 arcs. Box 1354, AMERICAN CINEMATOGRAPHER.

16MM HOUSTON-K-1A . . . developing machines. For reversal or positive film. Complete with refrigerator units, temp controls, condensors, etc. BRAND-NEW, prices reduced. Also all STAINLESS STEEL model A-11B. Neumade film washer, 35mm EYEMO cameras, spider turrets, large selection of Eyemo lenses, 35mm x 1000 film. AIR PHOTO SUPPLY, Dept. C-1, 555 East Tremont Ave., New York 57, New York.

PROCESS PROJECTION EQUIPMENT

PRECISION REGISTRATION — USED MITCHELL OR CUSTOM BLIMPED TYPE ON PORTABLE CASTER BASES. COMPLETE WITH SCREENS, INTERLOCKED DISTRIBUTORS, CABLES, INTERCOMS, LENSES, ETC. FULL INFORMATION, PHOTOS AND PRICES ON REQUEST. BOX 1340, AMERICAN CINEMATOGRAPHER.

MAGNASYNC 602-C recorder, $850.00, B&H Model 285 projector with synchronous motor, $450.00, Concerton 1401 recorder, $140.00, records—Paxton, F.D.H. & Chappell, Hickcock tube checker, misc. equipment, turntables, converter, etc. DONALD E. DUNN, 26246 Fairview Ave., Lomita, Calif. Tel. Dav. 6-4925—call after 6 P.M.

FILM PROCESSING MACHINERY

Rebuilt trade-ins, demonstrators, etc. Black-and-white and color. All makes. Low prices. Send for lists. FILMLINE CORPORATION, Erna Street, Milford, Conn.

AURICON 600′—1200′ conversion. Sr No. 1010 model CM-75TVT, Tr. S. Complete with amplifier 600′ and 1200′ magazines, built in finder system and critical focuser, Auricon tripod. Excellent. P.O. Box 2384, Sarasota, Florida.

FOR SALE: BOOKS ON PHOTOGRAPHY AND MOVIES FROM 1845. FOR COLLECTOR AND RESEARCHER. SEND 25¢ FOR LIST. IRVING BROWNING, 1845 BROADWAY, NEW YORK 23.

NEW demonstrators. 16mm PATHE (without lens), $450.00 value, $260.00. Bolex tripod, extension tubes, rackover, $111.50 value, $58.00. KAILBOURN'S, 52-½ Main, Wellsville, N.Y.

REVERSAL COLOR PROCESSOR

Large rebuilt reversal color processor, Fonda drive. Cheap. METAL MASTERS, 5599 University Ave., San Diego 5, Calif.

ONLY AVAILABLE 16mm color footage of WW II destruction in Phillippines and Japan. REH, 14808 Aztec, San Fernando, California.

B&H rackover. Write for details. MARTORELL, Sur 51-154 Mexico City.

CINE Special Series 1. Perfect. 1″ lens. $400.00. Write Box 1250, AMERICAN CINEMATOGRAPHER.

EXCELLENT BUY

STANCIL HOFFMAN S6B 17-½mm magnetic sound recorder system, complete with rotary converter, AC-DC power supply, camera control unit, phones and cables. Ideal for STUDIO and LOCATION use. (Would consider trade for 35mm Arriflex equipment.) Box 1353, AMERICAN CINEMATOGRAPHER.

USED CRAB TYPE DOLLIES

Houston Fearless Cinemobiles. Attractively priced.
CAMERA EQUIPMENT CO. INC.
315 West 43rd St. **New York 36, N.Y.**

TRIPOD—B&H friction head 3-7′, accommodates Bolex, Mitchell. $52.50. Box 1347. AMERICAN CINEMATOGRAPHER.

Continued on Next Page

Classified Ads

Continued From Preceding Page

WANTED

YE OLDE TRADING POST
DOING BUSINESS 35 YEARS
BUYS — SWAPS — SELLS YOUR
Cameras, Dollies, Lenses, Lights, Movielas, Printers, Recorders, Studio or Laboratory Equipment.
CONSIGNMENTS TAKEN
SET YOUR OWN PRICE—
SHIP IT IN
OUR PERCENTAGE IS SMALL
WIRE US—WUX New York,
Phone PL 7-0440
S.O.S. CINEMA SUPPLY CORPORATION
Dept. fc **Cable: SOSOUND**
602 W. 52nd Street **New York 19, N. Y.**
Western Branch—6331 Hollywood Blvd.
Hollywood, Calif., Phone HO 7-2124

WANTED TO BUY FOR CASH
16MM AND 35MM CAMERAS AND ACCESSORIES
MITCHELL—BELL & HOWELL STANDARD AND EYEMO—ARRIFLEX—MAURER—ALSO
LABORATORY AND EDITING EQUIPMENT
CAMERA EQUIPMENT CO. INC.,
315 West 43rd St. NEW YORK 36, N.Y.
CABLE—CINEQUIP

WHY SACRIFICE
your production and struggle with old or used equipment when we can trade for cash or new equipment. Let us know what you have and what you need.
THE CAMERA MART, INC.
1845 Broadway., PLaza 7-6977., New York 23, N.Y.

WANTED
16 or 35mm New or Used
B & H Film Printer
MOVIELAB FILM LABORATORIES, INC.
Movielab Bldg., 619 W. 54th St., New York 19, N.Y.

TRY F&B LAST
FOR THE HIGHEST QUOTE ON
USED MOVIE EQUIPMENT
FLORMAN & BABB
68 W. 45th ST., N. Y. 36, N. Y.

Mitchell — Akeley — B & H — Wall — Eyemo
Cameras — Lenses — Equipment
NATIONAL CINE EQUIPMENT, INC.
209 West 48th St. **New York, N.Y.**

ARRIFLEX IIA or IIB. Send full particulars and price. Box 1352, AMERICAN CINEMATOGRAPHER.

SERVICES AVAILABLE

16MM MOTION PICTURE PRODUCTION
Film Editing—Sound Recording—
Sync-Sound Effects—
Industrial—Advertising
Educational—Travel
Sound Stage Available
HARRY MERRICK STUDIO
1901 West Anaheim St., Long Beach 13, Calif.
HEmlock 6-3291.

DUTCH FILM PRODUCER offers all possible help in Europe. No language troubles. International trained technicians available. We solve all YOUR problems. Write or wire: WALTER DE VRIES, Lepelstratt 20-C AMSTERDAM, Holland. Telephone 57807.

DIRECTOR-CAMERAMAN, fifteen years experience with all 16mm and 35mm camera and editing equipment. Capable of complete production responsibility. Excellent references. Resume on request. Box 1351, AMERICAN CINEMATOGRAPHER.

ANIMATION produced in Japan from your storyboards. Low Japanese rates. Send us a trial order. INTERLINGUAL INTERNATIONAL INC., Harada Bldg., 2-1 Hirakawacho, Chiyoda-ku, Tokyo.

FILM ASSIGNMENTS New York, Boston area. Scenic, stock shots, industrial, featurettes creatively filmed to your specifications. ACORN FILMS, 168 W. 46th St., N. Y. C. Judson 6-2272.

SERVICES AVAILABLE

HIRE ME! Producer, cameraman, writer, editor. Top references TV, educational, theatrical. Age 28. Free to relocate from Midwest. Box 1349. AMERICAN CINEMATOGRAPHER.

BIOLOGICAL—medical—scientific footage shot to your specifications. Top educational film supplier. Low rates. Box 1350. AMERICAN CINEMATOGRAPHER.

CHICAGO and vicinity, shot by outstanding pros—16mm and 35mm. Box 1348. AMERICAN CINEMATOGRAPHER.

CAMERAMAN — 16/35mm — works footage basis. MARTORELL, Correo Aeres, Bogota, Columbia.

CENTRAL AFRICAN coverage. GEOFFREY MANGIN, Telefilms, Box 8252, Salisbury, Rhodesia.

LABORATORY & SOUND

ROCKY MOUNTAIN 16MM HEADQUARTERS
16mm Black & White and Anscochrome—Processing—Printing — Recording — Editing — Production — Rental — Sales. All types of film in stock.
Write for Price List
WESTERN CINE SERVICE, INC.
114 E. 8th Ave., Denver 3, Colorado. AMherst 6-3061

SOUND RECORDING at a reasonable cost. High Fidelity 16 or 35. Quality guaranteed. Complete studio and laboratory services. Color printing and lacquer coating. ESCAR MOTION PICTURE SERVICE, INC., 7315 Carnegie Avenue, Cleveland 3, Ohio. Phone ENdicott 1-2707.

16MM MAGNETIC SOUND STRIPING
Originals—Prints—Raw. Full, half or edge tracks, .025 per foot, including balance stripe if specified. 24 hour service.
P-J FILM PRODUCTIONS,
Box 2655 Colorado Springs, Colorado

BOOKLETS CATALOGS and BROCHURES

SMPTE on Sound

"The Soundtrack in Nontheatrical Motion Pictures" is title of a tutorial paper by Frank Lewin presented at the SMPTE's convention at Detroit October 24, 1958. Part 1 of the paper —Components of the Soundtrack—is available from the Society in a 20-page booklet.

The three components of the soundtrack—voice, music, sound effects—are delineated in Part 1, plus a discussion of editing of the soundtrack as it relates to the overall production of the film. Included, also, are suggested techniques for screening prior to the re-cording.

Available from the Headquarters Office of the SMPTE, 55 West 42nd St., New York 36, N.Y. Price, $1.00 per copy.

Kodak Service Brochure

Color film services for amateur and professional photographers are described in a newly-revised 8-page booklet available free from Eastman Kodak Co., Rochester 4, N.Y.

Titled "Kodak Color Processing, Printing, Duplicating Services," booklet tells how to order these services for Kodachrome, Ektachrome, and Kodacolor films, and lists the wide range of services offered on each of these films.

For Kodachrome film, details are given on original and duplicate movie processing, and Kodak Sonotrack (magnetic sound track) Coating services.

Rental Catalog

Birns and Sawyer, 6424 Santa Monica Blvd., Hollywood 38, Calif., announces availability of company's latest Rental Catalog (No. 3) — 32 pages plus more than 80 illustrations that describe the 16mm and 35mm motion picture cameras, lighting equipment, and instrumentation cameras which the company offers on rental or lease basis. Copies are free.

Newsfilm Directories

Spotlight News, television news service which serves TV stations in U.S. and abroad, publishes two comprehensive Newsfilm Directories—one for the New York-Washington, D.C. area and one for Southern California. Directories list key personnel, such as station managers in charge of newsfilm assignments, news directors, etc., plus the call letters, channel numbers, and the location of business offices of the stations listed. Also included are listings of the various regional newsreel organizations. "Stringers" and other newsfilm cameramen should find the directories of value. Write Ben Greenberg, Spotlight News, 607 N. La Brea Ave., Los Angeles 36, Calif.

Camera Selector

A new, 4-page folder issued by Traid Corp., Encino, Calif., illustrates and describes 27 different motion picture and sequence data cameras which the company makes available on lease or outright sale. Titled *Camera Selector*, handy folder includes such information as frame speed, film capacity, overall dimensions, power requirements, special features, price and rental rate for each camera in addition to illustrating it. For free copy, address request on your letterhead to Carlos Elmer, Traid Corp., 17136 Ventura Blvd., Encino, Calif. ■

NEW MAGNAPHONIC SYSTEMS COMPONENTS from Magnasync

STUDIO MIXING CONSOLETTES

Specifically designed for motion picture re-recording applications

A miniaturized studio mixing console with six input channels and patch bay selection of three program equalizers. Up to three plug-in microphone pre-amplifiers may be optionally added. Line amplifier has input and output level controls; "film-direct" monitor switch with film gain control, and matching blank panels are provided for custom additions.

GENERAL SPECIFICATIONS:

Modular construction of cabinet and components, optional plug-in microphone pre-amplifiers, and hinged top door for complete accessibility to all components.

Frequency response: 20 to 20,000 cps, ±1.5 db.
Signal-to-noise ratio: 70 db below program level.
Distortion: Less than 0.5% total harmonic.
Output level: Maximum 20 dbm.
Power consumption: 80 watts.
Size: 34½" width, 24" depth, 14" height.

Model G-963 . . . $1475.00
with in-line (triple) equalizer
Model G-961 . . . $1195.00
with single equalizer

PROGRAM EQUALIZERS

Specifically designed for magnetic recording and reproduction. No maintenance required . . . all components except switches are sealed and encapsulated. Guaranteed performance.

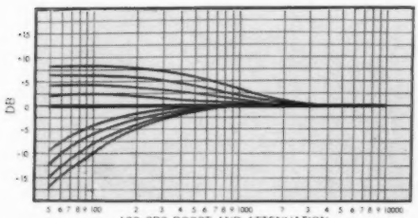
GENERAL SPECIFICATIONS

Impedance: 600 ohms.
Switching: Silent "IN-OUT" with 14 db loss pad.
Insertion loss: 14 db.

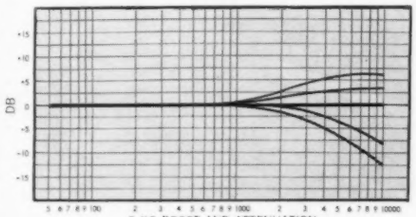
Immediate delivery

Input level: —70 dbm min., +20 dbm max.
Controls:
Low frequency, 8 positions in 2 db steps.
High frequency, 8 positions in 3 db steps.
Mounting: Standard WE hole spacing.
Size: 19" x 3½" x 3½".

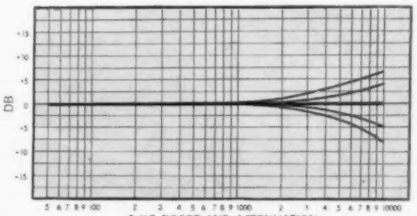
Model G-801, Single Equalizer..... **$159.50**
Model G-803, In-line (triple) Equalizer.. **$395.00**



100 CPS BOOST AND ATTENUATION



5 KC BOOST AND ATTENUATION



8 KC BOOST AND ATTENUATION

TURNTABLE DEGAUSSER

semi-automatic—total erasure

Immediate delivery

For all magnetic films and instrumentation tapes

Model A-937 DEGAUSSER features a predetermined 20-second timed cycle that completely eliminates guesswork. The pushbutton-controlled motor-driven turntable insures fast and complete bulk erasure and eliminates noise patterns which are generated by irregular rotational motion. **$159.50**

Model M-937 MANUAL DEGAUSSER—smooth, free-wheeling turntable, will not damage edges of instrumentation tapes or films..... **$119.50**

Model G-936 CONVENTIONAL DEGAUSSER—an effective bulk eraser economically priced. **$69.50**

Write, wire or phone

MAGNASYNC MANUFACTURING CO., LTD.

5546 Satsuma Ave., North Hollywood, Calif. • TRiangle 7-5193 • Cable "MAGNASYNC"

International leaders in the design and manufacture of quality film recording systems

CHICAGO, Zenith Cinema Service, Inc.; **LOS ANGELES,** Birns & Sawyer Cine Equipment Co.; **SAN FRANCISCO,** Brooks Camera Co.; **NEW YORK,** Camera Equipment Co.; **AUSTRALIA,** Sydney, New South Wales, Sixteen Millimetre Australia Pty. Ltd.; **BELGIUM,** Brussels, S.O.B.A.C., S.A. (Societe Belge D'Applications Cinematographiques); **BOLIVIA** Las Paz, Casa Kavlin; **BRAZIL,** Rio de Janeiro, Mesbla, S.A.; **CANADA,** Toronto, Ontario, Alex L. Clark, Ltd.**DENMARK,** Copenhagen, Kinovox Electric Corp.; **ENGLAND,** London, W-1, Delane Lea Processes, Ltd.; **HONG KONG,** Supreme Trading Co.; **INDIA,** Bombay, Kine Engineers; **ITALY,** Rome, Reportfilm S.R.L.; **JAPAN,** Tokyo, J. Osawa & Co., Ltd.; **PAKISTAN,** Karachi 3, Film Factors Ltd.; **SWITZERLAND,** Zurich 7/53, Rene Boeniger; **THAILAND,** Bangkok, G. Simon Radio Co., Ltd.

6-minute 16mm sound film "Planning an Integrated Sound System" available for loan, free, on request.

is the sincerest form of flattery

and flattered we are that other laboratories sometimes use our registered trademark

color-correct®

as an industry standard to mean the finest quality in color duplicating.

color-correct®

is owned by Byron, Inc., and is registered in the United States Patent Office under Trademark No. 575058. By law, we are required to protect our trademark by defending against all improper uses and infringements. So when these two words

color-correct®

are used together in reference to motion picture film, they apply to our registered process only—for only Byron has the right to use this term—only Byron can deliver **color-correct** prints.

byron

laboratory

1226 Wisconsin Ave., N.W.
Washington 7, D. C. • FE 3-4000

1226 East Colonial Drive
Orlando, Florida • CH 1-4161